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Challenges to social mobility in Singapore

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Abstract

Singapore had achieved impressive economic growth together with a high level of upward mobility since her independence in 1965. However, the growth process might have become more uneven, in addition to diminishing growth for a matured economy like Singapore, which is also a highly open city state subject to competitive forces from other economies. Singapore has fared well recently, evident from the 2020 social mobility findings reported by the World Economic Forum and the decline in Gini coefficients for the past decade. We discuss the education system in Singapore and the recently formed National Jobs Council, both important institutions for the advancement of social mobility, followed by some forthcoming policies on foreign manpower, and other related policies to tackle inequality and issues on social mobility.

COVID-19 brought forth four consecutive Budgets addressing not just immediate and short-term concerns but planning for the recovery and growth in the future. We examine challenges to social mobility: future growth prospects and processes, fiscal sustainability expecting greater social spending, and opportunities of the middle-income class together with other familial challenges in Singapore. Using a simple model which endogenizes inequality and upward mobility, we analyse important past events and future scenarios: past influx of and future reduction in migrant unskilled workers, preference shift toward equity, early education intervention, and jobs in the future. We recommend a dedicated office to coordinate and evaluate various social mobility programmes. Strengthening the social compact via policies encouraging concern for others will bring a positive spill-over on both social well-being and social mobility in Singapore.

Keywords: Social Mobility, Singapore, COVID-19, Social Compact, Migrant Workers, Inequality, Middle Income Class, Inclusive Growth

JEL Classification: D63, E66, I31, J61, J62, J68, Y10

1 Introduction

Over the past 50 years, Singapore had experienced high economic growth and high upward mobility. Figure 1.1 shows the Gross Domestic Product (GDP) from 1975 to 2019. The GDP in 2019 was about 6.1 times that in 1975 registering an average growth rate of 4.25 per cent per annum. The Singapore government continues to embrace growth-oriented policies to continue this upward trend of real GDP per capita such as enhancing human capital via re-training and life-long learning, attracting foreign investors, importing technologies and skilled talent, investing heavily in R&D, or exploring export markets for Singapore goods and services.

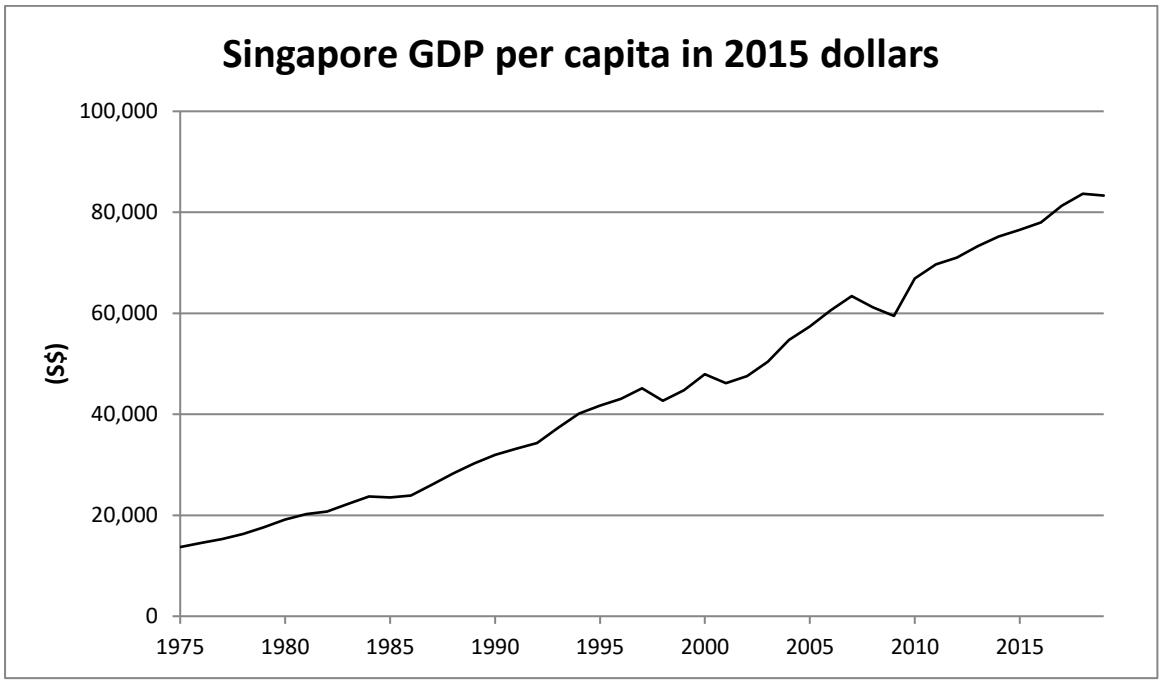

Figure 1.1: Singapore GDP per capita from 1975 to 2019 (in 2015 prices)[1]

Does rising per capita GDP translate to rising household income? We look at more recent statistics on household incomes in Singapore, with households defined to be those headed by Singapore citizens or Permanent Residents (PRs). Figure 1.2 shows the average and median household incomes for Singapore while Figure 1.3 shows the average and median incomes per household member. We can see that the average and median household incomes have risen steadily over the years. However, is the growth process inclusive, with benefits evenly distributed to all individuals and households? Does this growth equate to upward social mobility for all? Also, what are the challenges faced by future generations of Singaporeans as more climb up the social ladder? Do the less well-to-do suffer and are left behind? How are social mobility and inequality related?

[1] Source: Department of Statistics Singapore. GDP per capita is estimated by dividing annual GDP by total population. For annual GDP, see https://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=16034. For annual population, see http://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=1347.

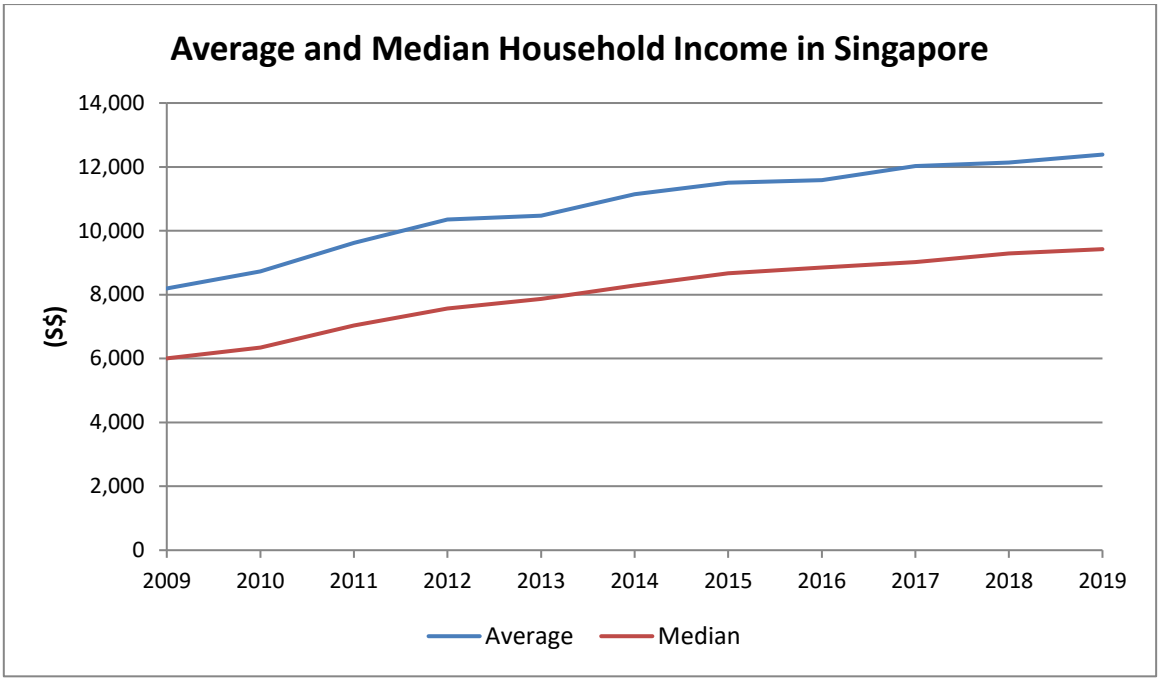

Figure 1.2: Average and median household incomes[2]

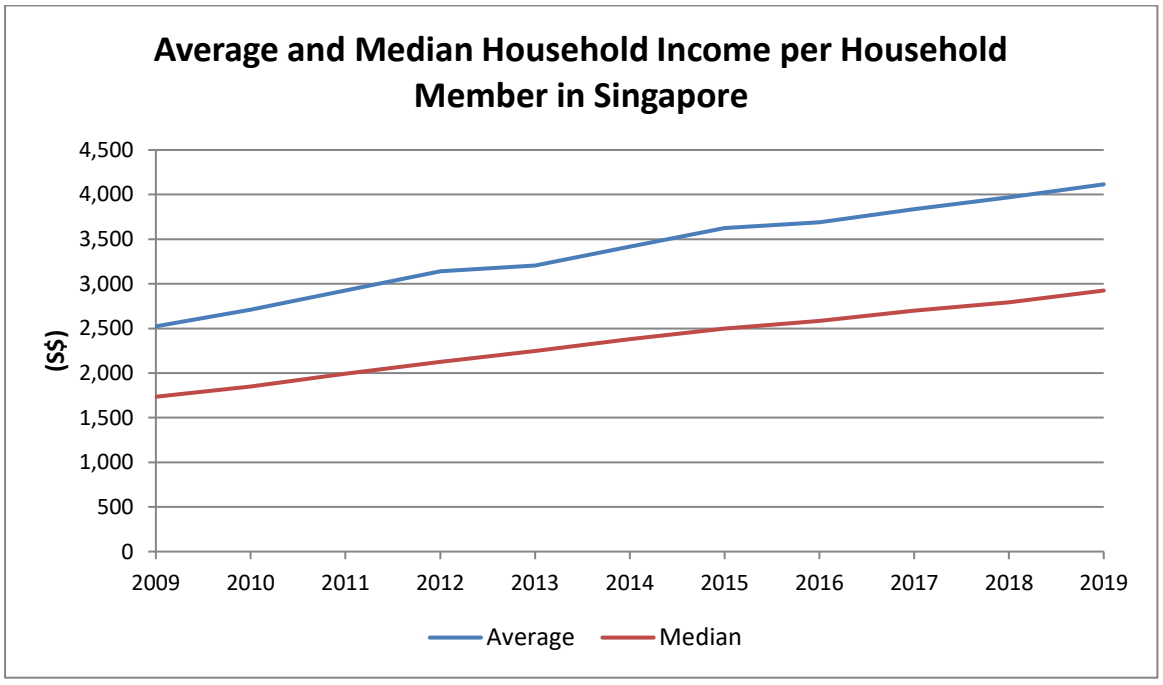

Figure 1.3: Average and median income per household member[3]

To answer these questions, we will first look at inequality and then social mobility. A common measure of a country's current income inequality is given by the Gini coefficient which has a scale of zero to one where a value of zero represents complete equality and a value of one represents complete inequality. The higher the value of a country's Gini coefficient, the more unequal the income

[2] Source: Department of Statistics Singapore. Resident Employed Households Income from Work (Including Employer CPF Contributions). See https://www.tablebuilder.singstat.gov.sg/publicfacing/createSpecialTable.action?refId=16788.
[3] Source: Department of Statistics Singapore. Resident Employed Households per Household Member Income from Work (Including Employer CPF Contributions). See http://www.tablebuilder.singstat.gov.sg/publicfacing/createSpecialTable.action?refId=16744.

distribution is for that country. Figure 1.4 shows the Gini coefficients of Singapore from 2007 to 2019, registering roughly a downward trend. Furthermore, after government taxes and transfers, which are redistributive in nature, the Gini coefficients for the various years were reduced accordingly.

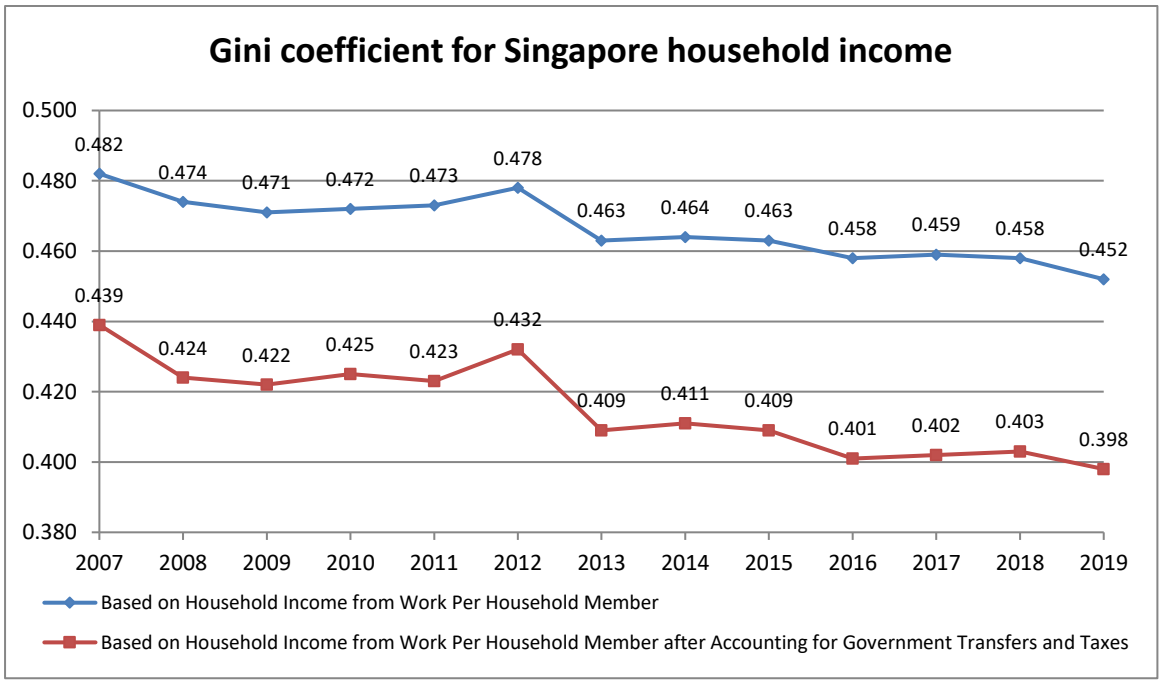

Figure 1.4: Gini coefficient for Singapore household income[4]

How does Singapore compare with other countries? The Gini coefficients for various countries (as of 2017 or latest available), after taxes and transfers, and adjusted for household size, are given in Figure 1.5. Singapore's Gini Coefficient of 0.401 after taxes and transfers in 2017 is comparable but higher than the average of OECD countries which is 0.315.

[4] Source: Department of Statistics Singapore. See http://www.tablebuilder.singstat.gov.sg/publicfacing/createSpecialTable.action?refId=16785.

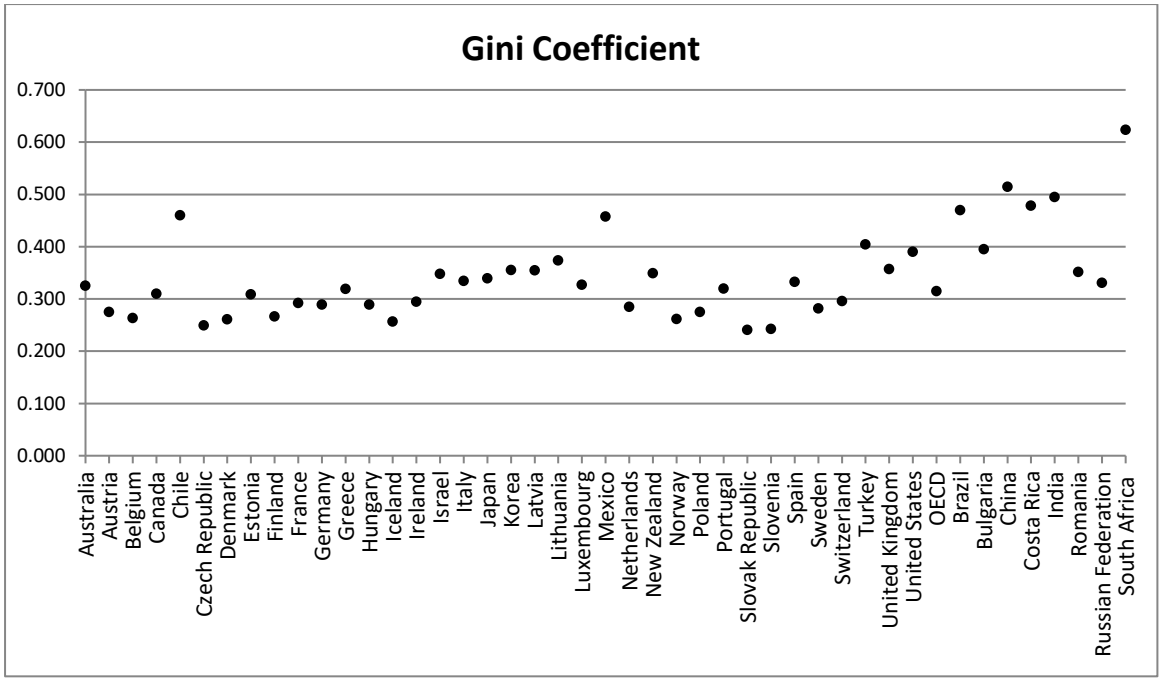

Figure 1.5: Gini Coefficients after Taxes and Transfers of OECD Countries[5]

Inequality can have both positive and negative effects on individuals and the society. The positive effect of inequality is that it incentivises the less-to-do individual to want to move up the social ladder through education, training and even investing in their offspring. The negative effects of inequality encompass psychological states of mind such as envy, and even feelings of unfairness especially when inequality becomes entrenched, and social mobility, the chance of moving up across generations, is limited. How are social mobility and inequality related?

We will first state the two dimensions of social mobility before examining its relationship with inequality. Social mobility can be defined to be absolute as well as relative: the former is concerned with one moving up in economic status such as income, education, and occupation, as compared with one's parents; the latter measures the independence of one's status on the parental status. We will consider both dimensions; however, we will choose to focus on either aspect when it is more appropriate for the discussion.

Inequality and social mobility may be jointly endogenous, influenced by other variables such as structural changes in technology, demography, and government policies in education and the labour market. This chapter will introduce a simple demand-supply framework of social mobility and inequality to understand how structural changes in technology, demography, and government policies in education and labour market may affect the joint equilibrium of social mobility and inequality. We will use it to explore the impact of Covid-19 as well later.

A measure of social mobility is intergenerational mobility. While the Gini coefficient is a static measure of inequality, intergenerational mobility is a dynamic measure. Over time and over generations, changes in the weights of each relative position in a social ladder give a measure of the dynamic changes in the distribution of people in the social ladder, and hence that is why relative social mobility is related to inequality in society.

[5] Source: OECD. See https://stats.oecd.org/Index.aspx?DataSetCode=IDD.

How had Singapore fared in terms of upward mobility in recent years? We will examine the changes in educational and occupational profiles of the Singapore residents from 2010 to 2019. Both Figure 1.6 and Figure 1.7 show the education attainments of resident non-students for various age groups for 2010 and 2019 respectively. We observe an improvement in the overall educational attainment of the resident non-students; in particular, for the group aged 25 to 29 years old, the proportion of them having a degree increased from 45.8 percent in 2010 to 55.8 percent in 2019.

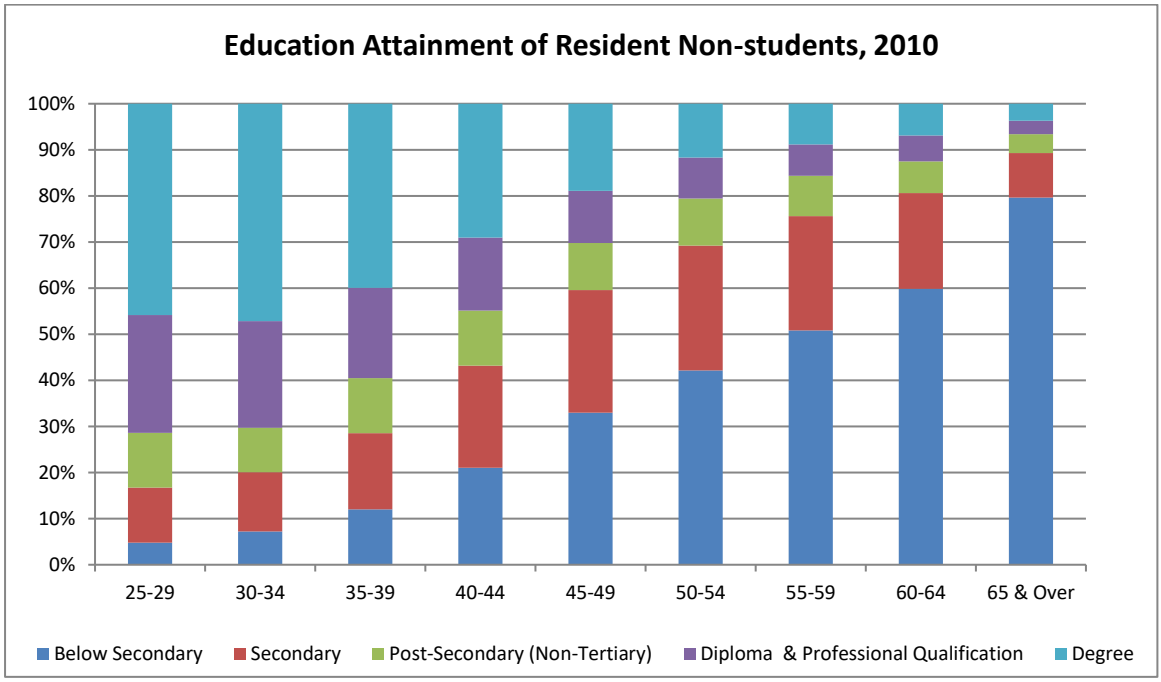

Figure 1.6: Education Attainment of Resident non-Students, 2010[6]

[6] Source: Department of Statistics Singapore. See https://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=12078.

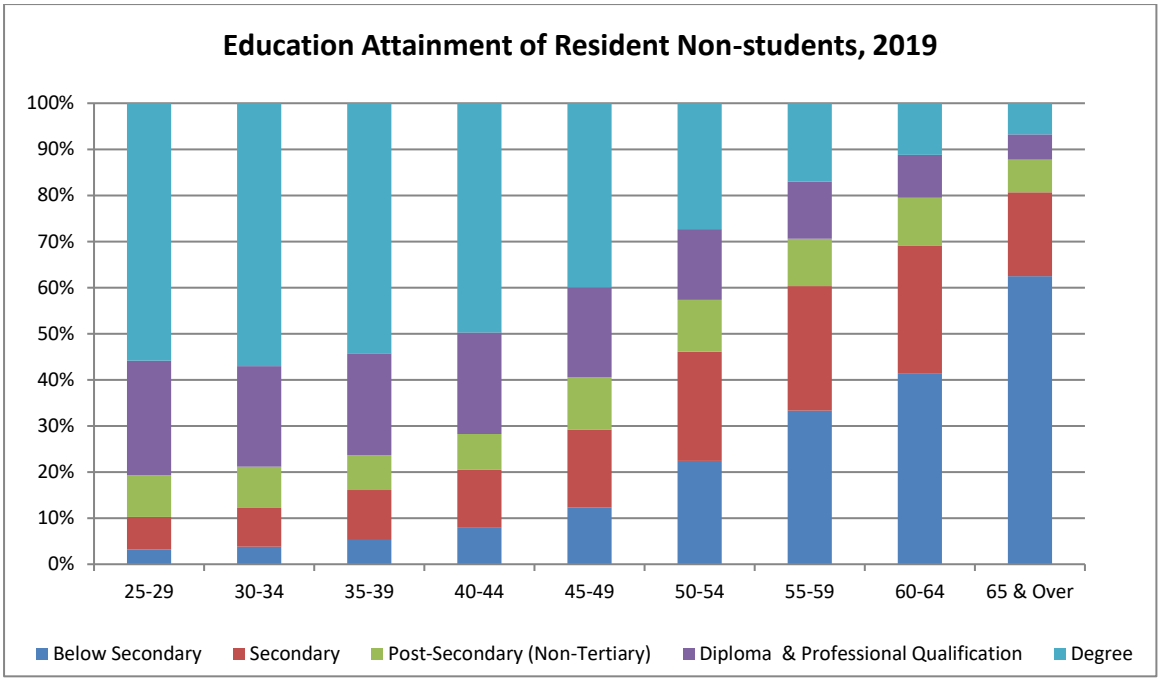

Figure 1.7: Education Attainment of Resident non-Students, 2019[7]

We see similar upward mobility in terms of occupational attainment. Both Figure 1.8 and Figure 1.9 show the occupational categories of resident working persons for various age groups for 2010 and 2019 respectively. Consistent with the observation on educational attainment, we see an overall improvement in skill levels proxied by the occupational categories; in particular, for the three group aged 25 to 29, 30 to 34, and 35 to 39 years old, the proportion working in professional, managerial, and technical positions increased from a range of 67.3 to 70.2 percent in 2010 to a range of 72.2 to 76.2 percent in 2019. Interestingly and not surprisingly, a higher proportion of older resident working persons work as production workers, cleaners, and labourers, as compared with the younger workers, for both 2010 and 2019.

[7] Source: Department of Statistics Singapore. See https://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=12078.

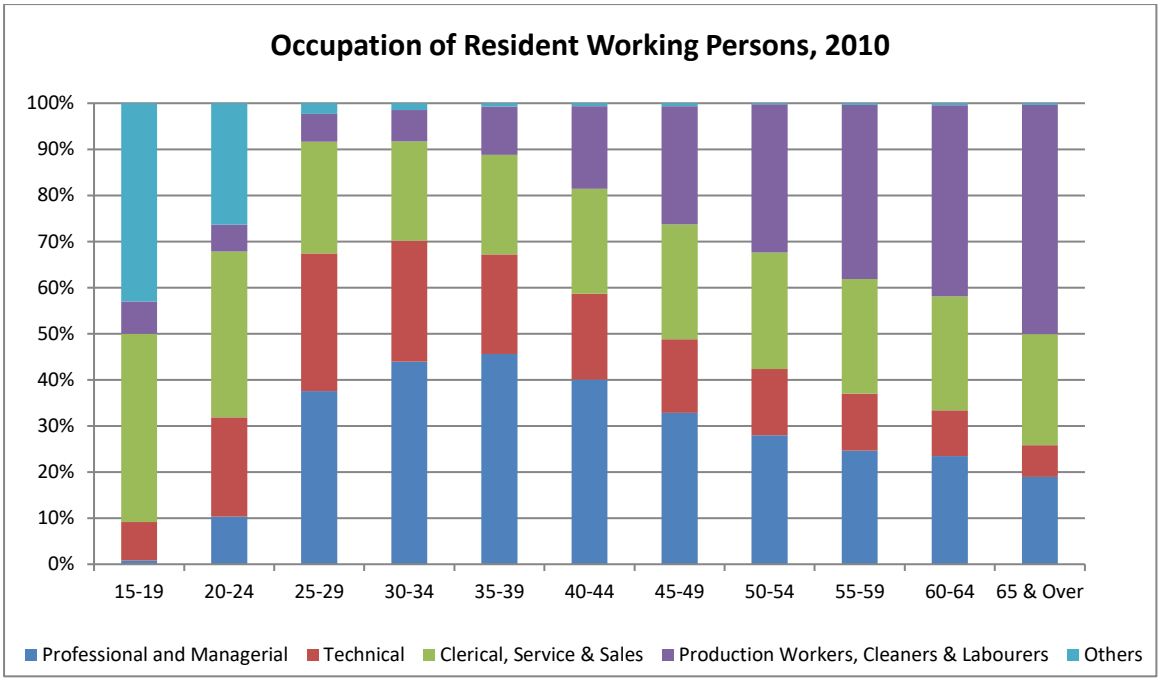

Figure 1.8: Occupation of Resident Working Persons, 2010[8]

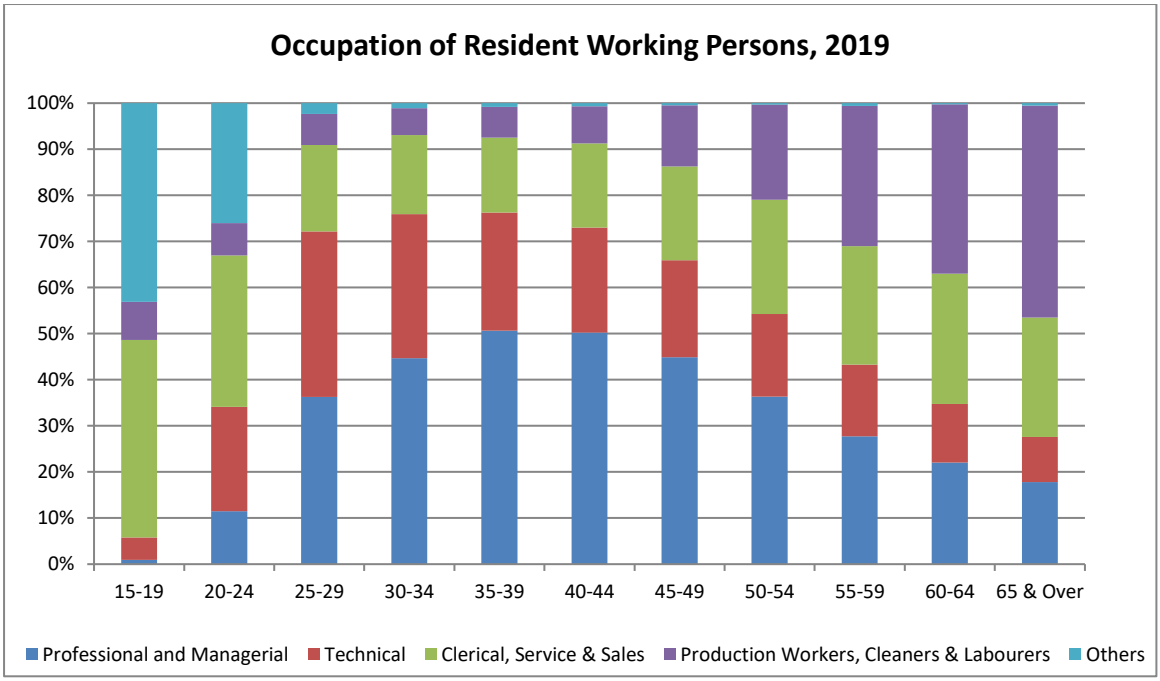

Figure 1.9: Occupation of Resident Working Persons, 2019[9]

Next, we want to find out more about the growth of household income. How about the household income growth rates by deciles for the past decade in Singapore? Figure 1.10 shows the annualised real change in average monthly household income[10] per household member from work between 2009

[8] Source: Department of Statistics Singapore. See https://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=14559.
[9] Source: Department of Statistics Singapore. See https://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=14559.
[10] Income includes employer CPF contributions

and 2019. Since 2009, there has been improvement in the average monthly household income across the board. Observe that the lower deciles registered higher average growth rates for the decade, while the higher deciles registered lower average growth rates, consistent with the declining Gini coefficients depicted in Figure 1.4. Singapore has enjoyed an inclusive growth in real household incomes for the past decade.[11]

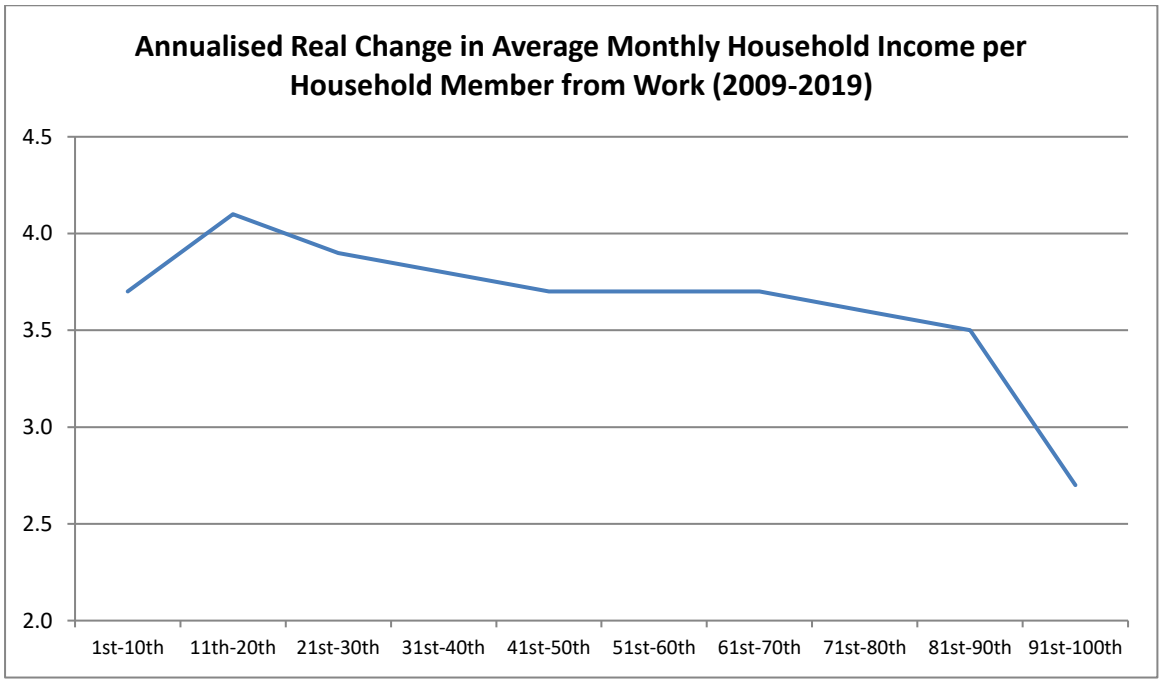

Figure 1.10: Annualised Real Change in Average Monthly Household Income per Household Member from Work (2009-2019)[12]

Next, we will discuss some past findings on the extent of social mobility in Singapore. Ho (2010) documented high upward (absolute) mobility in the earlier years as Singapore started from a large unskilled population, together with huge public investment in education and healthcare, benefiting the masses. However, the intergenerational education mobility regressions in Ho (2010), using National Youth Surveys 2002 and 2005, have shown the importance of parental influence, suggesting a possible low level of (relative) social mobility in terms of educational attainment.

Ng et. al. (2009) showed that Singapore in the 2000s was immobile when it came to intergenerational earnings mobility. This is because in order to maintain global competitiveness, Singapore often outsource low-end production with the immigration of low-skilled workers. This is turn resulted in stagnant wages of the bottom earners hindering intergenerational mobility.

However, later literature seems to suggest that things are improving in Singapore. Yip (2012) found that for those born in Singapore between 1969 and 1978, there was high intergenerational mobility. This is probably due to the abundant educational opportunity available to them due to Singapore's

[11] Figure 13.6 of Ho (2010) showed the top household income decile growing at a much faster rate than the lower deciles from 1995 to 2006, consistent with rising Gini coefficients in the past. For the past decade, the trend seemed to have reversed.

[12] Source: Department of Statistics Singapore. Resident Employed Households per Household Member Income from Work (Including Employer CPF Contributions). See https://www.tablebuilder.singstat.gov.sg/publicfacing/createSpecialTable.action?refId=16804.

rapid economic expansion during the 1960s to 1980s. This is evident in statistics that show that there is a large increase in the child's educational attainment over the father for the cohorts in the study. Yip (2012) also found some evidence, though not strong, of lower mobility among the poor, using the quantile regression methodology of Eide and Showalter (1999) who established that the poor in the U.S. had lower mobility; a possible reason is the pervasive education expansion enjoyed by the Singaporean cohorts then.

Singapore Minister for Finance Mr. Tharman Shanmugaratnam, when delivering the Economic Society of Singapore SG50 Distinguished Lecture in 2015[13], highlighted that the real incomes for both low-income and middle-income Singaporeans, have increased five to six times since 1965. This is despite the fact that Singapore managed to sustain income growth across all income groups whereas the middle-group often experience wage stagnation in advanced countries like Hong Kong and Taiwan in the last decade. In particular, there was 39% real median income growth for Singaporean households over the last decade, where even for lower-income households they experienced 37% real income growth. In terms of intergenerational mobility, 14.3% of Singapore children born to parents in the bottom 20% can expect to reach the top 20%, faring better than countries like Denmark, US and the UK. One of the ways the Singapore government aims to improve social mobility is through early intervention by spending more on disadvantaged children, making preschools more affordable, and locating more preschools near homes.

Are there more recent studies on social mobility of Singapore? Instead of using economic statuses of two generations to derive the intergenerational elasticity, the World Economic Forum (WEF) uses a different approach to derive an intergenerational mobility index, a more holistic approach listing the contributions of different categories and pillars to social mobility, and Singapore is in the sample studied by WEF.

1.1 Social Mobility Index

Figure 1.11 shows the Social Mobility Index[14] of the Top 20 countries compiled by WEF. Singapore is among the top 20 countries with an overall score of 75. In fact, Singapore scored very well, better than or on par with the average of high-income countries or economies for most pillars, except two pillars: Fair Wage Distribution and Social Protection, as shown in Figures 1.12 and 1.13 for the top 20 countries in the overall Social Mobility Index. The main reasons for Singapore's lower scores in these two pillars are perhaps a heavy reliance on migrant unskilled workers, an absence of minimum wage, and a lack of universal unemployment benefits; WEF likely did not factor in the national schemes and policies of Singapore contributing to Fair Wage Distribution and Social Protection such as Workfare Income Supplement, Progressive Wage Model, and other targeted schemes to help low-income workers.

[13] The statistical report of Minister Shanmugaratnam's speech is available in Singapore Ministry of Finance (2015).
[14] The Global Social Mobility Index was developed by the World Economic Forum (WEF) and tracks intergenerational mobility measured through ten pillars in five categories – Health, Education, Technology Access, Work, and Social Protection and Inclusive Institutions across 82 global economies.

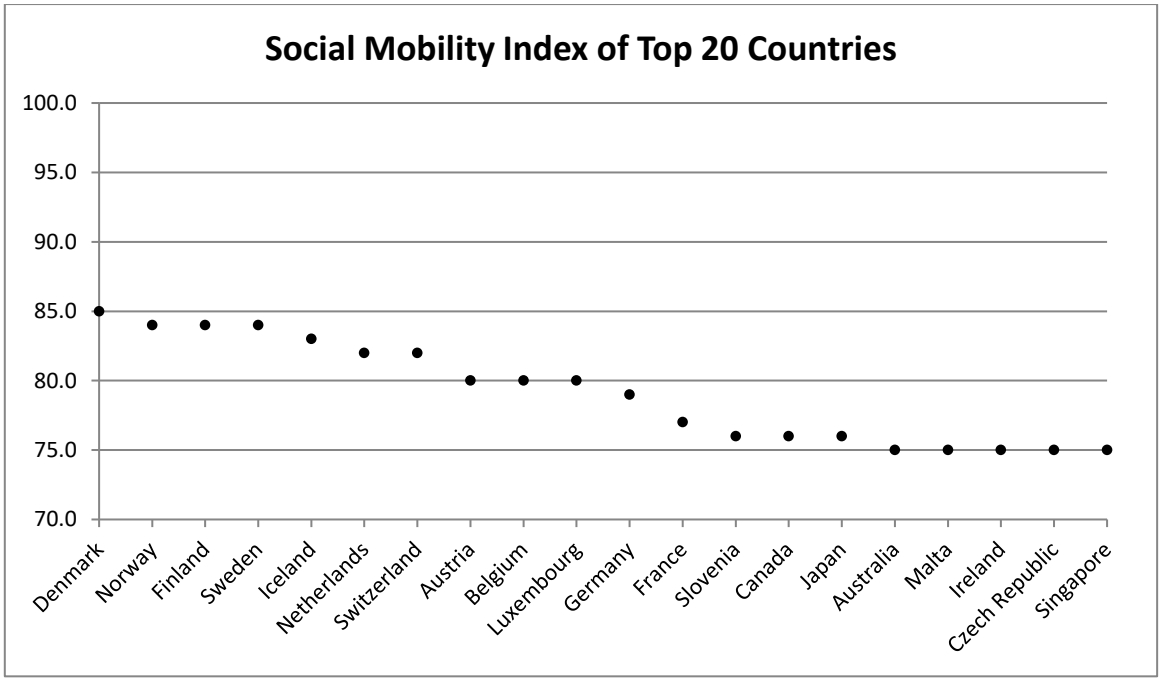

Figure 1.11: Social Mobility Index of Top 20 Countries[15]

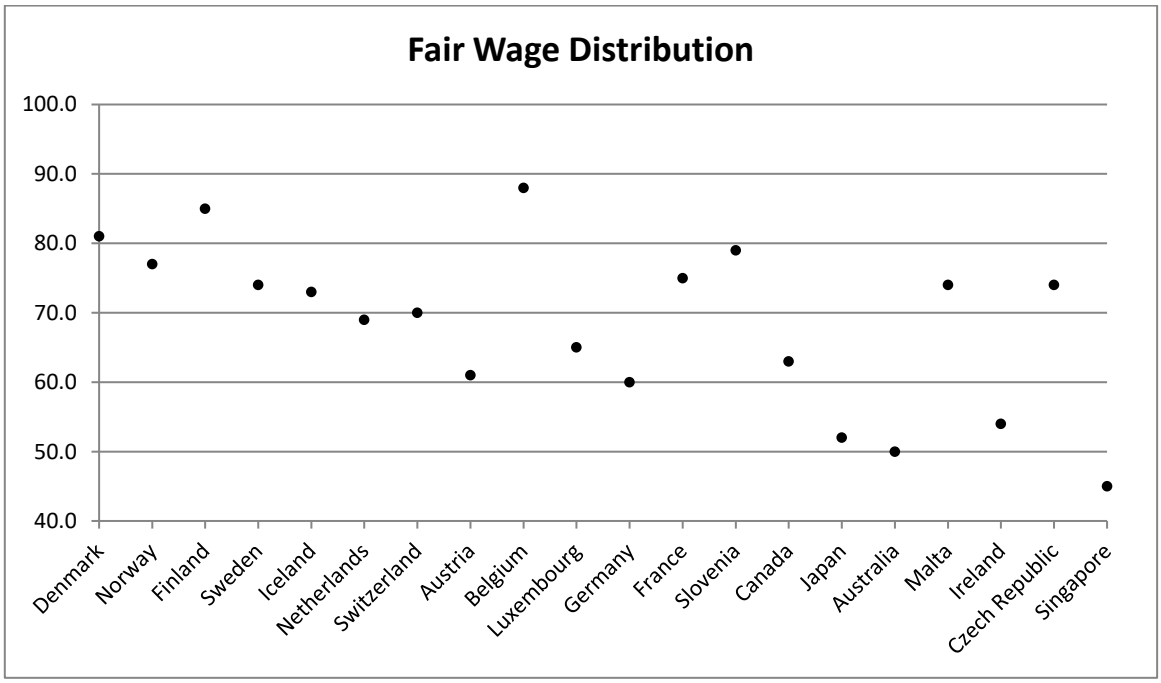

Figure 1.12: Fair Wage Distribution of Top 20 Countries with Highest Social Mobility Index[16]

[15] Source: World Economic Forum. See https://www.weforum.org/reports/global-social-mobility-index-2020-why-economies-benefit-from-fixing-inequality.
[16] Source: World Economic Forum. See https://www.weforum.org/reports/global-social-mobility-index-2020-why-economies-benefit-from-fixing-inequality.

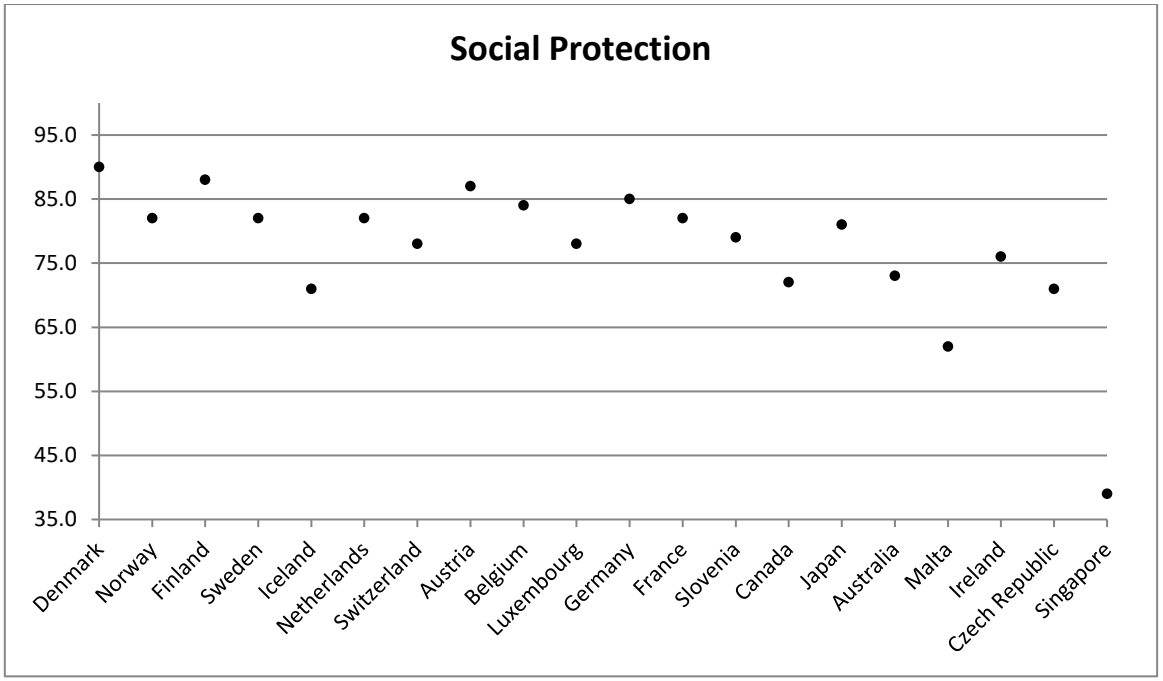

Figure 1.13: Social Protection of Top 20 Countries with Highest Social Mobility Index[17]

Apart from the recent studies of WEF, OECD has published 2018 PISA test results for a group of countries or economies, relevant for understanding of social mobilities as educational outcomes are related to human capital investment by the government and the parents.

1.2 PISA Score

Singapore continues to rank high in PISA test results (ranked 2nd in 2018) as shown in Figure 1.14.

[17] Source: World Economic Forum: https://www.weforum.org/reports/global-social-mobility-index-2020-why-economies-benefit-from-fixing-inequality

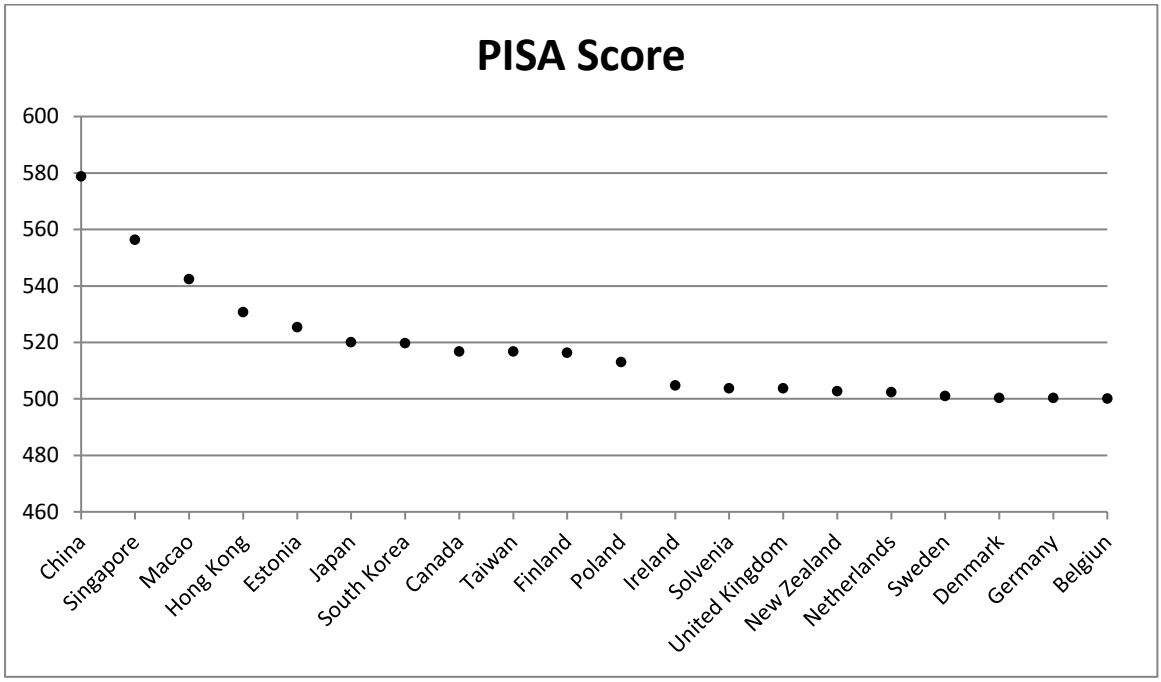

Figure 1.14: 2018 PISA Scores of Countries with scores of 500 and over[18]

To find out inequality in educational outcomes, we will look at the differences between the 90th percentile and the 10th percentile for various tests and compare Singapore with the OECD average, Norway, and China represented by Beijing, Shanghai, Jiangsu and Zhejiang. Table 1.1 shows the difference in reading, maths and science performance between the 90th and the 10th percentiles. Norway and Singapore had a higher variation between the 90th and the 10th percentiles as compared to the OECD average, while China (represented by Beijing, Shanghai, Jiangsu and Zhejiang) showed less variation. This suggests that the education outcomes inequality (measured by differences in test scores across two percentiles) in Singapore is higher than both the OECD average, and the four cities of China.

[18] Source: FactsMaps. See http://factsmaps.com/pisa-2018-worldwide-ranking-average-score-of-mathematics-science-reading/.

	OECD average	Norway	China (Beijing, Shanghai, Jiangsu and Zhejiang)	Singapore
Difference in reading performance between the 90th and the 10th percentiles (in score points)	260	276	225	285
Difference in maths performance between the 90th and 10th percentiles (in score points)	235	236	205	244
Difference in science performance between the 90th and the 10th percentiles (in score points)	244	259	213	254

Table 1.1: Difference in Performance between the 90th and the 10th percentiles[19]

Education prepares students for future jobs and possibly future uncertainty. What are the attitudes of the students related to failures and future jobs? Table 1.2 shows the fear of failure and concerns about future job among students. It is worth noting Norway and China echo the OECD average and have little fear of failure, while students in Singapore record a high index of 0.50. Does that mean Singaporeans students are more risk averse?

The number of advantaged and disadvantaged students in Norway who have no clear idea about their future job is similar to the OECD average. The number of disadvantaged students in China and Singapore who have no clear idea about their future job is slightly less than the OECD average, while the number of advantaged students who have no clear idea about their future job is significantly less than the OECD average. This suggests that advantaged students in Singapore may have a path already laid out for them.

[19] Source: OECD Education GPS. See https://gpseducation.oecd.org/IndicatorExplorer.

	OECD average	Norway	China (Beijing, Shanghai, Jiangsu and Zhejiang)	Singapore
Index of fear of failure (average=0, std.deviation=1)	-0.01	N/A	0.00	0.50
Students who have no clear idea about their future job among disadvantaged students (%)	24.3	23.3	21.1	20.9
Students who have no clear idea about their future job among advantaged students (%)	22.8	24.3	11.5	16.8

Table 1.2: Fear of Failure and Concerns about Future Job[20]

Table 1.3 shows differences in performance according to Economic, Social and Cultural Status (ESCS) of the students, which can be influenced by their parents. The difference in reading performance between students in the top quarter and students in the bottom quarter ESCS in China is similar to the OECD average, while Norway records less difference and Singapore registers a higher difference. Similarly, the increased likelihood of students in the bottom quarter of ESCS scoring below Level 2 in reading, relative to non-disadvantaged students and advantaged students in Singapore is higher than that of the OECD average. In summary, we would like to interpret that parental background which might be captured in students' ESCS matters in test scores for Singaporean students; furthermore, comparing with Norway, Singapore is quite different, and incidentally, Norway has a higher Social Mobility Index than Singapore shown in Figure 1.11.

[20] Source: OECD Education GPS. See https://gpseducation.oecd.org/IndicatorExplorer.

	OECD average	Norway	China (Beijing, Shanghai, Jiangsu and Zhejiang)	Singapore
Difference in reading performance between students in the top quarter and students in the bottom quarter of the economic, social and cultural status index (ESCS)	89	73	82	104
Increased likelihood of students in the bottom quarter of ESCS scoring below Level 2 in reading, relative to non-disadvantaged students (3 other quarters of ESCS)	2.70	2.42	2.92	3.14
Increased likelihood of students in the bottom quarter of ESCS scoring below Level 2 in reading, relative to advantaged students (top quarter of ESCS)	5.12	2.85	5.91	5.46

Table 1.3: Differences according to Economic, Social and Cultural Status index[21]

Table 1.4 shows variation in reading performance explained by students' and schools' Economic, Social and Cultural Status (ESCS), which might sieve out differences caused by differences in schools, such as elite schools versus non-elite schools. Overall, Norway has less variation explained by ESCS as compared to OECD average, while China is close to the OECD average and Singapore is above the average. As for variation between schools, Norway has a much less variation explained by ESCS, as compared to the rest. Comparing Singapore with Norway, Singapore has a much larger variation in test scores between schools being explained by students' and schools' ESCS, possibly because Norway's schools are more homogenous with school assigned according to catchment areas or zones, and grouping by ability is restricted, while Singapore has more schools with different programs, attracting and selecting students of peculiar characteristics and background. Social network built in schools might follow the students through their working and social lives. Incidentally, Institute of Policy Studies (2017)[22] reported that social mixing in Singapore can be improved across class groups: between those with and without elite school background; between those living in private homes and public flats.

[21] Source: OECD Education GPS. See https://gpseducation.oecd.org/IndicatorExplorer.
[22] See http://str.sg/oo8e, and https://lkyspp.nus.edu.sg/docs/default-source/ips/study-of-social-capital-in-singapore.

	OECD average	Norway	China (Beijing, Shanghai, Jiangsu and Zhejiang)	Singapore
Variation in reading performance explained by students' and schools' economic, social and cultural status (ESCS), overall (%)	12.0	7.5	12.6	13.2
Variation in reading performance between schools explained by students' and schools' economic, social and cultural status (ESCS) (%)	30.1	10.4	32.2	34.8
Variation in reading performance within school explained by students' and schools' economic, social and cultural status (ESCS) (%)	69.4	102.7	44.2	82.8

Table 1.4: Variation in Reading Performance explained by Economic, Social and Cultural Status[23]

Similar to the 2018 PISA results, Osman (2015) also found that socioeconomic background is a factor in determining students' test performance in Singapore in the 2015 PISA tests. Middle and upper class students have an advantage over their peers mainly because of entrance to good primary schools and access to private tutoring. Some countries that Singapore can learn from are Estonia which provides universal early childhood education to level the playing field and stem out the shadow education industry, and Finland which removes school affiliation to prevent elitism.

This is echoed by Ng (2014) and Smith et. al. (2015), which found that Singapore's education system tends to reduce intergenerational mobility. Ng (2014) reasons that this is due to streaming and grouping based on ability and academic performance, and the privatisation of basic and tertiary education. Smith et. al. (2015) argues that parents who cannot afford to send their children for tuition are at a disadvantage and cannot compete with children who go through tuition in the highly competitive Singapore education environment.

In the following section 2, we shall review some global findings on inequality and mobility and consider the relevance for Singapore. Section 3 setups a simple demand-supply framework of upward mobility and wage inequality. Section 4 discusses some key institutions and policies adopted by the Singapore government to reduce inequality and promote social mobility together with growth. Section 5 highlights the four consecutive budgets for Singapore, unprecedented due to COVID-19. Using the model presented in section 3, section 6 analyses key events in the past and considers possible future changes. Section 7 highlights the challenges faced by Singapore in upholding social mobility. The concluding remarks are given in Section 8.

[23] Source: OECD Education GPS. See https://gpseducation.oecd.org/IndicatorExplorer.

2 Literature review

This section will review some recent international studies on inequality and social mobility, especially those relevant to the case of Singapore.

Using international data, Pickett and Wilkinson (2009) documented social problems associated with inequality: obesity, drug use, imprisonment, homicide, and lower child wellbeing. Similarly, Chetty et al. (2016) found higher income was associated with greater longevity, and differences in life expectancy across income groups increased over time for the U.S.; furthermore, the differences in life expectancy were correlated with health behaviours and local area characteristics. Economic inequality correlates with social problems and social conditions and it is important to examine income disparity holistically.

A recent OECD (2018) report highlighted that in the OECD countries, the average disposable income of the richest 10% of the population is around nine and a half times that of the poorest 10%, much higher than the ratio of seven times, 25 years ago; furthermore, wealth inequality is more pronounced now. Why? The benefits of growth since the 2008 financial crisis had been enjoyed mainly by the top of the income distribution, leaving the poor behind. Wealth inequality is more persistent as income inequality can be transmitted across generation via intergenerational transfers, including educational investments by parents in their children.

In terms of education mobility, children whose parents did not complete a secondary school education have only a 15% chance of making it to university, while the chance for children with at least one parent with a tertiary education is 60%, based on OECD (2018). Four-in-ten people with low-educated parents have lower secondary education themselves, and only one-in-ten continues onto tertiary education, compared with two-in-three for children with high-educated parents. For life expectancy, a 25-years-old university educated man can expect to outlive his lower-educated peer by almost eight years on average. Parental earnings account for 38% on average of an individual being able to move up the social ladder with some countries going as high as 70%.

There is a variation across countries. Social mobility is high in most Nordic countries and low in Continental European countries as well as emerging economies. To increase social mobility, OECD (2018) recommends better access to high-quality early education and care, universal access to health insurance, good work and family life balance, progressive tax systems with adequate rates, and policies to reduce regional divides and spatial segregation. Singapore has some of these features, and the Early Childhood Development Agency (ECDA) was launched in 2013 to oversee especially the key aspects of children's development below the age of seven.

Early intervention in pre-school education is an important tool to uplift the future opportunities for children born in poor families. Using data from PISA 2015, Salinas (2018) found that in most countries, socio-economic disparities in performance appeared early and widened over time. Among 10 years old, the gap in mathematics performance related to socio-economic status was about two-thirds the size of that observed among 25-29 years old. Academic performance when young mattered as it affected students' education attainment later, followed by their job market prospects and earnings trajectory. Early intervention focusing on educational equity would be an effective way to enhance upward social mobility; in Singapore, the Early Childhood Development Agency (ECDA), formed in 2013, was tasked to uplift the overall quality of pre-school education, for families rich and poor, among other objectives. Also, Ministry of Education (MOE) Kindergartens (MKs) provide subsidized

pre-school education to children aged 5 and 6 years old who are Singapore citizens and permanent residents.

How about findings on university education of low-income students? Based on a randomized experiment with students from low-income families attending 13 public universities across Wisconsin, Goldrick-Rab et al. (2016) found that offering students additional grant aid did increase the odds of bachelor's degree attainment over four years, but students' short-term out-of-pocket costs could be unmanageable, causing them to leave college. Setting academic merit requirements for needy students might reduce the effectiveness of the financial assistance; instead, targeting those who just missed those requirements, and perhaps a non-merit-based selection would enhance the effectiveness of such financial aid. Singapore government has various bursary schemes and financial assistance for university students from low-income families and that perhaps could be expanded further.

Using data for over 30 million college students from 1999-2013 in the U.S., Chetty, Friedman, Saez, Turner and Yagan (2017) found that children from low and high-income families had similar earnings outcomes conditional on the selective college they attend, indicating that low-income students were not mismatched at such colleges. Rates of bottom-to-top quintile income mobility were highest at certain mid-tier public universities while rates of bottom quintile to top 1% income mobility were highest at elite colleges, suggesting that increasing the access of low-income students to colleges with good student outcomes will enhance the contribution of higher education to upward mobility. While Singapore does not have a wide spectrum of universities and colleges, we do note that there might be a difference in the quality of education provided by the major government-funded universities and the private educational institutions awarding corresponding degrees from overseas universities, with graduates from the former getting better outcomes in terms of employment and starting pay. Enhancing the access of students from low-income families to the better state universities will strengthen the link from higher education to upward mobility.

Is higher education the policy for social mobility beyond the initial stage of development of East Asian economies? Marginson (2018) cautioned with three conditions for such a policy based on the experience of Western countries: funding for education should come largely from public sources, not private economic resources; all degrees have significant values, not just from top universities which are attracting extensive investment in private advantage; private universities play a modest role, reducing the potential social differentiation of graduation from private or public universities. These conditions might not be satisfied in East Asian countries, possibly including Singapore.

Next, we will briefly review some studies on other aspects of social mobility: middle-income squeeze, race, and residential location. Chetty, Grusky, Hell, Hendren, Manduca and Narang (2017) estimated in the U.S., the prospects of children earning more than their parents have faded over the past half century. Absolute income mobility, defined to be the fraction of children who earn more than their parents, has fallen across the entire income distribution, with the largest declines for families in the middle class. Income growth has stagnated across much of the income distribution. They recommend spreading the returns of growth instead of merely focusing on growing the economy. Likewise, the middle-income group in Singapore might experience a squeeze and face a treat of potential uneven growth; Ho (2016) provides some evidence that the middle income class might be squeezed in terms of national pride (a feeling as part of the Singapore nation) as well as attitude towards income redistribution.

Using U.S. longitudinal data from 1989-2015, Chetty et al. (2019) found that race is important in explaining income distribution and mobility. Hispanic Americans are moving up significantly in the

income distribution because they have relatively high rates of intergenerational income mobility. In contrast, black Americans have substantially lower rates of upward mobility and higher rates of downward mobility than whites, leading to large income disparities that persist across generations. After parental income is controlled for, very little of the black-white income gap can be explained by differences in parental marital status, education, and wealth. Also, differences in ability do not explain the patterns of intergenerational mobility. Singapore pays much attention and puts in efforts to ensure racial and religious harmony, critical for an inclusive society sharing the prosperity of growth.

Chetty and Hendren (2018) found that in the U.S., children in poor families had better outcomes if they were from U.S. counties with better social capital (such as less concentrated poverty, less income inequality, better schools, a larger share of two-parent families, and lower crime rates). Variation in boys' outcomes was higher than girls' outcomes, and boys have especially negative outcomes in highly segregated areas. Areas with better outcomes had higher house prices on average, but there were many "opportunity bargains" – places generating good outcomes but were not very expensive. Moving families to these "opportunity bargains", together with other place-based investments, would improve economic opportunity of the families. Chetty et al. (2014) found that high mobility areas have less residential segregation, less income inequality, better primary schools, greater social capital, and greater family stability. Based on these studies, intergenerational mobility in U.S. is a local problem, one that could potentially be tackled using place-based policies, as well as reducing segregation in society across class and education. While Singapore has no highly segregated areas as in U.S., there might be other potential forms of social class divides associated with housing types, schools of origin, effectively social mixing which forms social capital which might have an impact on employment opportunities, as highlighted in Institute of Policy Studies (2017). Developing common public areas to facilitate integration and social mixing would be relevant for the case of Singapore.

Analysing 133 policy changes in the U.S. over the past 50 years, Hendren and Sprung-Keyser (forthcoming) estimated that direct investments in low-income children's health and education had historically the highest Marginal Value of Public Funds (MVPF), and even expenditures on adults could have high MVPFs if they had large spill-over effects on their children. Furthermore, when government expenditure boosted human capital, an increase in net government revenue would ensue, offsetting the policy's upfront costs of investment. In other words, we may suggest that investments in the next generation of low-income families will enhance social mobility and reduce inequality, noting that investments come in the form of health, early education and perhaps university education, and other types of investments in social networks and locations, as discussed in this section.

3 Framework

Inter-generational mobility or opportunity is a dynamic measure of inequality. If one's economic status (in terms of income, educational attainment, or occupation) is highly dependent on parental economic status, then we would say that inter-generational mobility is low, which corresponds equivalently to a low level of opportunity in the society. We will outline and extend the simple demand-supply framework developed in Ho (2010) which jointly endogenizes social mobility (or upward mobility to be precise) and wage inequality. This simple model enables us to derive the Great Gatsby Curve in which low social mobilities are associated with higher inequalities, an empirical relationship across countries.

The well-being of an individual parent (V^p) is given by the sum of his or her own well-being (u^p) and the well-being of his or her children (V^c)

$$V^p = u^p + \beta V^c$$

where a more altruistic parent will have a higher degree of altruism β. A child is born unskilled and can become skilled depending on the investment of the parent (i) in the child's education.

Wage equality, being the inverse of wage inequality (which may be viewed as the returns to educational investment for upward mobility), is the opportunity cost of upward mobility. Wage equality is given by the ratio of unskilled wage (w^u) to skilled wage (w^s):

$$Wage\ equality = \frac{w^u}{w^s}$$

Parental investment is a function of the price of upward mobility, taken to be wage equality given by the ratio of unskilled wage (w^u) to skilled wage (w^s), among other things.

$$i = i\left(\frac{w^u}{w^s}, \cdots\right)$$

A high wage equality means that the difference between the wage of an unskilled worker and a skilled worker is small (or the ratio is close to 1). When wage equality is high, it gives little incentive for any individual to want to climb the social ladder as the increment in additional wage when moving from being unskilled to skilled is small. Thus we say that the price of upward mobility is high when wage equality is high as individuals have little incentive to want to move up the social ladder or invest in their offspring's education. This results in a downward sloping demand curve as shown in Figure 3.1.

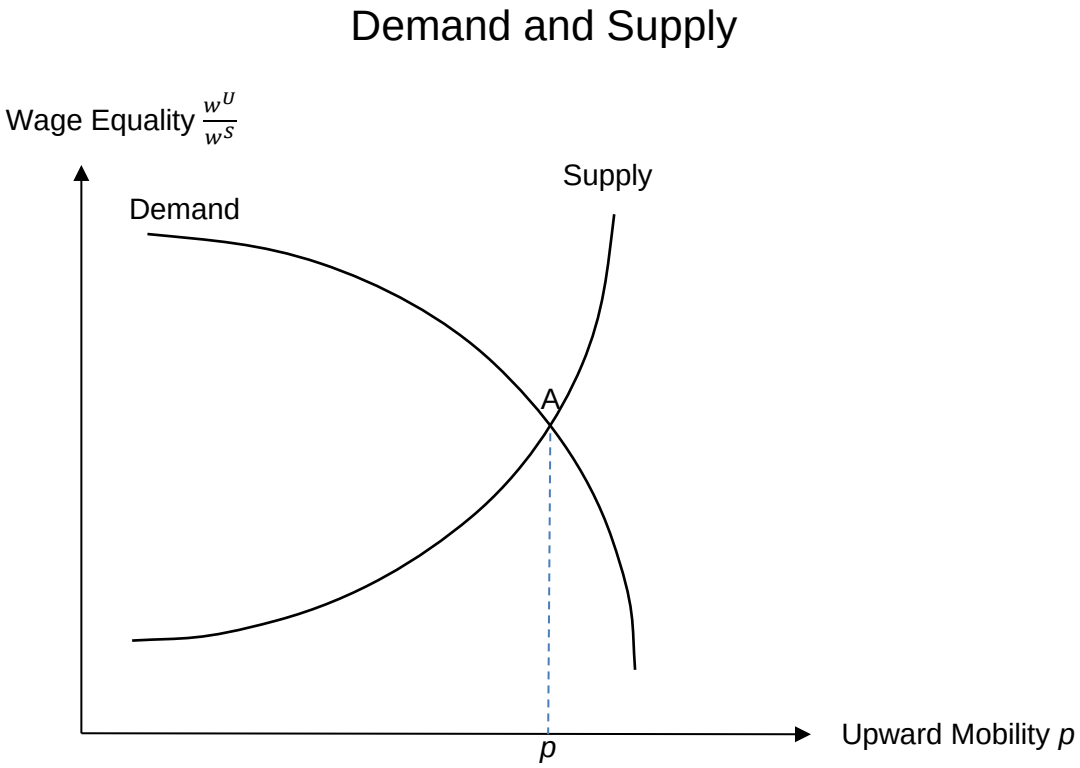

Figure 3.1: Demand-supply curve of Upward Mobility

For the supply side, when upward mobility is high, there will be a large supply of skilled labour. This lowers the wages of skilled labour which in turn increases wage equality (the ratio of unskilled wage to skilled wage). Hence the price of upward mobility (or wage equality) is positively correlated to upward mobility resulting in an upward sloping supply curve as shown in Figure 3.1. The supply curve is effectively the labour market clearing condition for the relative supply of skilled workers.

The intersection of the demand and supply curves gives the equilibrium level of wage equality and upward mobility in a society. Changes in government policies such as subsidies in public education can influence parental decisions on education investment based on returns to education, thus shifting the demand curve of upward mobility. Structural changes in technology or conditions in the labour market may shift the supply curve of mobility.

We may then consider shifts in the demand and supply curves resulting in new equilibriums of wage equality and upward mobility. For example, a lower public subsidy of education, equivalent to a heavier reliance on parental resources for educational investment, or even a marketization or liberalization the educational sector depending more on parental influence, will translate into a lower return on educational investment by parents, and holding other things constant, the demand curve for upward mobility will shift down, leading to a lower upward social mobility and lower wage equality.

Another example on skill-biased immigration: An influx of immigrant skilled labour may produce more skilled offspring due to genetic transmission and an effect on the labour market condition, ensuing in a rightward of downward shift of the supply curve. The demand curve may shift to the left if we assume skilled immigrant parents exert a certain pressure on the government, resulting in certain reek-seeking behaviours. The combined leftward shift of the demand curve and rightward shift of the supply curve will decrease wage equality but the impact on upward mobility is ambiguous.

A simple specification of the demand curve follows. The probability of success of upward mobility (p) is a function of parental investment (i), rent seeking (r), government subsidies (in education) (g), and others, recalling that parental educational investment is negatively related to wage equality, as discussed above:

$$p = p\left(i\left(\frac{w^u}{w^s}, \cdots\right), r, g, \cdots\right)$$

where p is increasing in i, decreasing in r, and increasing in g, among other factors. More prevalent rent-seeking, lower efficiency in educational investment, lower public subsidy or regressive public spending on education, family disruption such as rising divorce rate, a deterioration of social network or support facilitating educational investment will likely shift the demand curve to the left, according to our model setup.

We will extend the basic model to analyse some past events and predict some future changes in section 6 later.

4 Policies

This section looks at the social and economic policies of some key institutions adopted by the Singapore government, facilitating social mobility.

Smith et. al. (2015) stated that the four core principles of Singapore's policies are Home with family as basic building blocks, Meritocracy regardless of background, Harmony and respect within diversity, and Self-reliance coupled with Many Helping Hands. Wong and Fung (2018) reiterated that policies to cultivate social capital and harmony is crucial to economic growth. These will form the building blocks of the policies that the Singapore government adopts to tackle inequality and to facilitate social mobility. Most recently, Shanmugaratnam (2020) in his ministerial broadcast on Singapore's post-coronavirus future stressed the utmost importance of strengthening our social compact in the midst of the current pandemic and beyond, which is the cornerstone in ensuring everyone the full opportunity to do well for themselves through education, skills, and good jobs, keeping social mobility alive, and strengthening the culture of solidarity in Singapore. Focusing on social mobility, we noted from his speech that good schools are critical for social mobility with early intervention in equalizing opportunities when the children are young; equally critical will be continual upskilling and reskilling given rapid technological disruptions to many occupations. In short, opportunities in education and jobs are only possible in the future of Singapore with a socially cohesive economy.

We will next provide an overview of the education system in Singapore and the recently formed National Jobs Council, both important institutions for the advancement of social mobility, followed by some forthcoming policies on foreign manpower, and other related policies to tackle inequality and issues on social mobility.

4.1 Education

Education System

The Singapore government believes that education is one of the best social levellers in tackling inequality and social stratification. Universal education aims to lift the bottom by levelling the playing field for all citizens.

With an emphasis on early childhood education, Singapore's education system starts with pre-school education which is part of the Nurturing Early Learners (NEL) framework specifically for children between the ages of four and six years of age. NEL aims to nurture curiosity in children, encourage active learning and foster competence in critical thinking and reasoning through curriculum such as aesthetics and creative expression, discovery of the world, language and literacy, motor skills development, numeracy, and social and emotional development. The Early Childhood Development Agency (ECDA) oversees and facilitates quality improvement via certification and training subsidies of all pre-school and childcare centres in Singapore, including MOE kindergartens (MK), PCF Sparkletots and My First Skool, which are the major service providers associated with the public sector and the Labour Movement.

Education is then followed by primary education which is compulsory for all Singaporeans born after 1 January 1996. Upon completion of six years of primary education, students who pass the Primary School Leaving Education (PSLE) can proceed to obtain four years of secondary education under the Express stream or five years of secondary education under the Normal stream. Upon completion of the necessary years of study of secondary education, students who pass the Singapore-Cambridge

GCE N(A), GCE N(T) and GCE O levels can further proceed to acquire post-secondary education at Junior Colleges, Polytechnics, or Institute of Technical Education. Students who complete education at Junior Colleges and do well in the Singapore-Cambridge GCE A levels, can further their studies in one of the universities providing tertiary education. Similarly, students who graduate from polytechnics with good results can further their studies in one of the universities providing tertiary education. With emphasis on lifelong learning, Singaporeans are encouraged to continue education in adulthood and through their work-life by tapping on SkillsFuture credits. Streaming in the educational system aims to improves efficiency and at the same time, flexible pathways of opportunities are given to students to move up the educational ladder.

In recent years, there is a shift from Singapore's past rigid, top-down education system to a more flexible, broad-based and diverse system where students are provided with multiple pathways to pursue their interests and nurture their talents. One such change is enabling schools to admit students based on special talents and achievements, rather than just purely based on academic results. Schools are also given greater autonomy and resources to expand their curriculum including electives and co-curricular activities (CCA). There is also emphasis process of learning other than results of the outcome of learning, by nurturing joy in learning through reduction of school-based examinations and removal of streaming or banding. For example, Primary Three and Primary Five, Secondary One and Secondary Three mid-year exams will be completely removed from all schools. Students are also graded into wider bands to encourage social mixing of different streams into the same class. The introduction of Subject-Based Banding (SBB) allows weaker Normal-stream students to reach their full potential by taking on humanities subjects at a more demanding level.

One of the key challenges of the 21st century is to tackle the changes brought about by technology and globalisation which have both the potential to bring about great opportunities of growth but also threaten social mobility with increased inequality. To equip students with the necessary competencies to take on these challenges, the Ministry of Education (MOE) has embarked on three thrusts – Character and Citizenship Education (CCE 2021), Knowing Asia and Strengthening Digital Literacy.

CCE 2021 is particularly important in a digital world where anonymity exposes victims to cyber bullying and fake news is rampant. CCE aims to enable students with cyber wellness by nurturing values, national education, emotional learning, and education and career guidance. It also encourages more social mixing and interaction among students of different bands, building the social cohesiveness of Singaporean students.

Knowing Asia aims to prepare students to seize the opportunities presented by a developing Asia. It includes historical and cultural appreciation through humanities, communication skills through conversational language education, and physical overseas filed trips and missions. For instance, a "70-70" target is set to have 70% of Institutes of Higher Learning (IHL) students participating in overseas exposure programmes, and 70% among them going to ASEAN, China or India, which are expected to experience catch-up growth, and to offer our students greater opportunities than elsewhere.

Strengthening Digital Literacy equips students with the necessary digital skills through the "Find, Think, Apply and Create" framework where students will be able to gather information, evaluate the data, apply the results and produce digital solutions. More schools are encouraged to introduce coding or computer programming for fun to encourage students to familiarize with computational thinking skills. The government also aims to equip all students with a personal learning device (laptop or tablet) where they can access the Singapore Student Learning Space (SLS), a dynamic online learning portal launched by MOE. Through SLS, students can access the entire curriculum along with

interactive animations and self-assessment anytime, anywhere, which proved particularly useful during the COVID-19 circuit-breaker lockdown.

MOE hopes that all students will be equipped with Core Values such as respect, responsibility, integrity, care, resilience and harmony, Emotional Competencies such as self-awareness, self-management, social awareness, relationship management and responsible decision-making, and 21st Century Competencies such as civic literacy, global awareness, cross-cultural skills, critical and inventive thinking, communication, collaboration and information skills.

We will next discuss some specific policies related to education and upward mobility.

Early Intervention

The Early Childhood Development Agency (ECDA) was officially launched on 1st April 2013 to oversee the development of the early childhood sector in Singapore, across both kindergartens and childcare centres. One of the aims of setting up the ECDA is to increase social mobility and reduce inequality by integrating the administration and regulation of the preschool sector thus ensuring that every Singaporean child has a good start with access to quality Early Childhood Development Services and Programmes regardless of socio-economic background. This is done through means-tested subsidies and grants especially to low- and middle-income families so that quality pre-school programmes remain affordable. The ECDA also aims to improve the current teacher-child ratios to allow more focus and student-teacher interaction.

The KidSTART programme, an initiative under ECDA, provides children of low-income families with early access to health, learning and developmental support, and monitors their progress during the early years through home visitation, weekly community-based playgroup sessions and enhanced engagement with and support to parents of at-risk groups of children and youth. Similar interventions are also found in the U.S. and the Netherlands: the U.S. have programs such as Early Head Start, Perry Preschool Project and Abecedarian Project; in the Netherlands, Formula funding was adopted for all primary schools in 1985 where schools with substantial numbers of disadvantaged students received more funds. Such programmes are aimed to foster the upward educational mobility of children starting with disadvantages.

Beginning January 2020, means-tested subsidies for preschools have been extended to benefit even the middle-income groups: the gross monthly household income ceiling for Additional Subsidy and Kindergarten Fee Assistance Scheme (KiFAS) to $12,000[24], or $3,000 on Per Capita Income (PCI) basis, with lower income families receiving higher subsidies. Full-day preschool capacity has increased from 90,000 in 2012 to 180,000 currently and is planned to reach about 200,000 in a few years' time. By 2025, 80% of the pre-schoolers will be enrolled in government-supported preschools (with fees charged to parents being capped), an increase from the current 50%. For instance, for a family with household income of $3,000, the fee for a full-day childcare services by an Anchor Operator will be $3 with the enhanced subsidies and the after-subsidy fee for a full-day infant care services will be $54.

Using data from the Ministry of Manpower (MOM), Bull and Bautista (2018) documents that only 56.5% of fresh Early Childhood Education and Care (ECEC) graduates remain in the teaching force one year after graduation. Reasons cited for leaving the sector include relatively stagnant salary increment; perceived low prestige of the profession; lack of professional autonomy, esteem, or respect

[24] It is a substantial increase from a ceiling of $7,500 household income for Additional Subsidy and $6,000 for KiFAS.

by the public; and perceived lack of career advancement. They propose to promote flexi-work conditions in education industry. Whether recent policies of ECDA have improve the career progression of ECEC graduates would be important to evaluate using more recent data.

Support for Disadvantaged Students

The UPLIFT (Uplifting Pupils in Life and Inspiring Families Taskforce) Programme Office was set up within MOE in March 2019 to strengthen support for students from disadvantaged families and to enable them to reach their true potential via six strategies: strengthen after-school care and support for students; build students' mental and emotional resilience; strengthen parental engagement and support; implement practical solutions to absenteeism; enhance collaboration between schools and the community; strengthen coordination across these initiatives. As disadvantaged students face multiple problems and barriers to upward mobility, the six strategies aim to cover all areas needing help, and enhanced coordination with Social Service Offices (SSOs), Family Service Centres (FSCs), schools, other community organisations and Voluntary Welfare Organisations (VWOs) are needed for more complex cases. For instance, an UPLIFT scholarship provides an $800 annual cash award to low-income students admitted to independent schools; GEAR-UP works closely with community partners to provide customized support and after-school engagement for these students. Importantly, the office will track feedback and outcomes to evaluate the effectiveness of their interventions, and we are interested to examine their findings in the future.

4.2 National Jobs Council

In the Fortitude Budget announced by Deputy Prime Minister Heng Swee Kiat on 26 May 2020, the National Jobs Council will be formed to create job opportunities, and also to equip Singaporeans with the right skills amidst the COVID-19 situation in hope to secure workers' livelihoods and enhance their long-term employability. This is critical for the younger population, especially fresh graduates, who may lose optimism and ambition if they remain unemployed for long periods of time, as seen in many European countries despite having unemployment benefits.

Chaired by Senior Minister and Coordinating Minister for Social Policies Tharman Shanmugaratnam, the National Jobs Council held its first meeting on 03 Jun 2020.[25] The Council comprises of 17 members including political office holders Deputy Prime Minister Heng Swee Kiat, Minister for Trade and Industry Chan Chun Sing, Minister for the Environment and Water Resources Masagos Zulkifli, Minister for Education Ong Ye Kung, Second Minister for Finance and Education Indranee Rajah, Minister for Communications and Information S. Iswaran and Minister for Manpower Josephine Teo, and tripartite partners representatives from the National Trades Union Congress, Singapore Manufacturing Federation, Singapore Hotel Association, Singapore Business Federation, Singapore Accountancy Commission, the Association of Banks Singapore and the Singapore National Employers Federation. The involvement of the business players and the union are crucial to ensure a good match of jobs and the skills required and to be acquired, both currently and for the future.

The main task of the National Jobs Council is to oversee the design and implementation of the SGUnited Jobs and Skills Package announced in the Fortitude Budget by focusing on job matching and skills upgrading in the aftermath of COVID-19. This is done through leveraging on coordination between the government and its tripartite partners by creating and redesigning, transforming businesses, re-skilling workers and providing attachments.

[25] Source: Ministry of Trade and Industry. See https://www.mti.gov.sg/-/media/MTI/Newsroom/Press-Releases/2020/05/Press-Release---First-Meeting-of-National-Jobs-Council.pdf.

The Council will align its work and implementation strategies with those of the Future Economy Council and the Emerging Stronger Taskforce, assisting 100,000 job seekers in job placements, traineeships, and skills training placements over the next 12 months.[26] The Council will both push for enterprise digitalisation across all sectors, and equip critical digital skills to workers through training. The ramping up of the digitalisation process is more crucial now as revealed by COVID-19 and the subsequent lockdowns in many countries; incidentally, OECD (2019) warns that job disruptions are more severe compared to the past because of a faster penetration of technology and societies becoming more integrated. Future jobs opportunities are critical for social mobility, especially for those from disadvantaged background.

In support of the National Jobs Council, the Ministry of Manpower (MOM) updated its Fair Consideration Framework (FCF) to impose stiffer penalties for companies that discriminates hiring of Singaporeans, including favouring the hiring of foreigners over Singaporeans. Firms found guilty will not be granted new work passes for a minimum of 12 months and a maximum of 24 months. Singapore is a highly open economy-society, opened to foreign investment and foreign workers; the COVID-19 pandemic might have highlighted the need to refine our selection of foreign workers, at both ends of the skills spectrum.

4.3 Immigration and Foreign Workers

Population Expansion via Skill-based Immigration

Singapore's fertility rate measured 1.14 in 2019. To meet Singapore's population target of 6.5 million, population expansion is supplemented by skill-based immigration. Asher and Nandy (2005) highlight that to address the low fertility rate in Singapore, the Singapore government has permitted the share of the non-citizen population to triple between 1990 and 2005 to nearly 30 per cent. The current share of non-citizen population is about 38.7%.[27] An influx of skilled parents will increase the influence of parental background on their offspring's well-being. Skilled parents will have an advantage over existing unskilled parents in education investment in their children. In addition, skilled immigrants might be more likely to produce children who are future skilled workers, leading to an increase in upward mobility shifting the supply curve to the right, based on the model outlined in section 3. Oswin (2012) mentions that Singapore maintains a bifurcated migration regime that invites 'foreign talent' and their families to become part of the national family through naturalization, while 'foreign workers' have no route to future citizenship and are prohibited from bringing dependents with them, as well as from marrying and/or having children locally.

If skill-based immigration is coupled with an increased demand for skilled job resulting in an increment in wages for skilled labour, then there will be a downward shift in the demand curve of the model developed in section 3. The result will be an unambiguous decrease in the equilibrium wage equality, or equivalently, an increase in wage inequality.

Limit Immigration

The government maintains a migration regime that invites 'foreign talent' and their families to become part of the national family through naturalization. The Fair Consideration Framework in 2013

[26] Shanmugaratnam (2020) mentioned that "The public sector will also bring forward hiring for future jobs, in areas such as healthcare, early childhood development, education and social services."
[27] As of June 2019, Singapore has 3.50m citizens, 0.53m permanent residents, and 1.68m non-residents. Non-citizens comprise about 38.7% as of June 2019. The shares of permanent residents in 2019 and 2000 are respectively 9.3% and 7.2%. Source: https://www.singstat.gov.sg/find-data/search-by-theme/population/population-and-population-structure/visualising-data/population-dashboard.

ensures companies consider Singaporeans first. The Human Capital Partners Programme in 2016 rewards firms that invest in local workforce with better access to government's resources. The Singapore Budget 2019 states that Dependency Ratio Celling for services sector will reduce from 40% to 35% in 2021. The Singapore government is trying to limit foreign labour dependency & promote local workforce productivity. Ang et al. (2017) highlight that immigration has been a "hot button" issue in Singapore in recent years; the number of Permanent Residents granted has dropped greatly from 79,169 in 2008 to 29,265 in 2010, and has been quite stable for subsequent years, with a number of 32,710 in 2018.[28]

At the Ministry of Manpower (MOM) Committee of Supply 2020 debate[29], Minister Josephine Teo announced policies to strengthen a local core of skilled workers: starting from 1st May 2020, employers are required to advertise job vacancies paying a fixed monthly salary of less than $20,000 (instead of the previous level of $15,000) on Singapore jobs search portal MyCareersFuture.sg for at least 14 days, before submitting their Employment Pass (for positions with monthly salary above $3,900 instead of the past $3,600) applications to the MOM; starting from 1st July 2020, the Local Qualifying Salary (LQS) threshold for mid-skilled foreign employees will be raised by S$100 — from S$1,300 to $1,400; the sub-dependency ratio ceiling (DRC) for S-Pass holders in the construction, marine shipyard and process sectors would be cut from the current 20% to 18% on 1st January 2021, and to 15% on 1st January 2023, as announced earlier. These policies will bring about fairer opportunity and competition for the Singaporean workers as well as further cuts in Singapore's reliance on foreign workers, from mid-skilled to the high-skilled.

4.4 Upskilling and Wage Support

This section will first briefly discuss Workfare in Singapore serves as the fourth pillar[30] of Singapore's social security system that aims to assist low-skilled workers in staying employable and in their upward job mobility, followed by a discussion on SkillsFuture, an important institution in Singapore to lead the overall upskilling and reskilling of the workforce of Singapore, critical for upward mobility in an ever-changing global jobs market.

Workfare

The Workfare Income Supplement (WIS) Scheme was introduced in 2007 to provide the bottom 20% earners with wage supplement of up to an extra 30% of their income. Since its inception, close to 900,000 individuals have benefited from the program with $6.8 billion being handed out through cash payments and CPF top-ups. From 2020, the qualifying income cap will be raised from $2,000 a month to $2,300 a month, and the annual pay-out limit raised across all age groups. To ensure that WIS targets the less fortunate, individuals who qualify under the income cap but are living in properties whose annual value exceed $13k, or together with their spouse own more than one property do not qualify. As older workers are more vulnerable, the pay-outs are scaled such that older workers are entitled to higher pay-out limits. Through Workfare, the bottom 20% have seen their real incomes increase by about 40% cumulatively over the past decade, and gross monthly income growth have kept pace with the median income growth. A Ministry of Trade and Industry (2014) study found that WIS was incentivised less-educated Singaporeans to enter the workforce and stay employed.

[28] Source: Population in Brief 2019, https://www.strategygroup.gov.sg/files/media-centre/publications/population-in-brief-2019.pdf.
[29] Source: https://www.mom.gov.sg/newsroom/speeches/2020/speech-by-minister-for-manpower-mrs-josephine-teo-at-mom-committee-of-supply-2020.
[30] See, for example, https://www.csc.gov.sg/articles/workfare-the-fourth-pillar-of-social-security-in-singapore.

SkillsFuture

SkillsFuture was launched in 2015 to make Singapore a more inclusive society with all Singaporeans aged 25 and above receiving $500 of SkillsFuture credits at its inception. It aims to provide Singaporeans with the opportunities to attain skills mastery, regardless of their socio-economic status or background, by continually striving towards greater excellence through knowledge, application and experience. In 2020, the Singapore government pledged a further top-up of $500 to all Singaporeans aged 25 and older, and an additional top-up of $500 for those aged 40 to 60 as part of the Adapt and Grow initiative, to help workers move into growth industries. The Singapore government aims to double the annual job placement of locals in their 40s and 50s to around 5,500 by 2025.

The four key thrusts of SkillsFuture are (i) Help individuals make well-informed choices in education, training and careers, (ii) Develop an integrated high-quality system of education and training that responds to constantly evolving needs, (iii) Promote employer recognition and career development based on skills and mastery, and (iv) Foster a culture that supports and celebrates lifelong learning.

SkillsFuture is rolled out in fourteen frameworks – accountancy, aerospace, early childhood care and education, electronics, energy and chemicals, environment services, food services, hotel and accommodation services, infocomm technology, logistics, marine and offshore, precision engineering, retail, and sea transport, with infocomm technology being the most popular. In 2018, more than 285,000 working adult Singaporeans have benefited from SkillsFuture with 160,000 having used their SKillsFuture credits.

The implementation of SkillsFuture is under SkillsFuture Singapore, a statutory board under the Ministry of Education (MOE), with assistance from Workforce Singapore, a statutory board under the Ministry of Manpower (MOM). SSG plays a key role in assuring that private education institutions and adult training centres deliver high quality, industry-relevant training. It also ensures that skills remain relevant and supply meet industry demand by co-ordinating both continuing education and training (CET) and pre-employment training (PET). WSG oversees the development, competitiveness, inclusiveness, and employability of the local workforce to ensure that all sectors of the economy are supported by a strong, inclusive Singaporean core to meet on-going economic challenges and enable manpower-lean enterprises to remain competitive.

To encourage firms to send workers for training, the Singapore government subsidises up to 90% of course fees for Singapore Citizens and Permanent Residents and 80% of hourly basic salary through Absentee Payroll Funding. The SkillsFuture Enterprise Credit (which replaces the Productivity Solutions Grant) is a SkillsFuture Training Subsidy to encourage employers to invest in enterprise transformation and capabilities of their employees where eligible employers will receive a one-off $10,000 credit to cover up to 90% of out-of-pocket expenses on qualifying costs for supportable initiatives, over and above the support levels of existing schemes.

4.5 Connectedness to the Global Economy

Singapore is a small open economy-society, benefiting from her openness to international investment, international markets, international manpower, and even international technological ideas for pushing her growth in the future. Amidst current threats to the global economic environment such as trade tensions between US and China, uncertainty of Brexit, rising protectionism and especially the COVID-19 pandemic, all likely to stifle global trade and diminish economic growth, the Ministry of Trade and Industry (MTI) aims to help business to tide over these challenges by being stronger in four key thrusts – Stronger Globally, Stronger through Transformation, Stronger through Innovation, and

Stronger Together, and to push on with transformation efforts in preparation for the economic recovery. Apart from dealing with the immediate impact of COVID-19, these strategies also aim to bring about long-term growth benefits for the Singapore economy and upward mobility for her workforce. We will next outline the key features of the four thrusts.

Stronger Globally

Under Stronger Globally, the Market Readiness Assistance (MRA) Grant (introduced in 2013) has been extended for another three years until 31st March 2023. The MRA helps small- and medium-sized enterprises (SMEs) in expanding overseas by subsidizing up to 70% of costs. The grant cap ceiling has been raised from $20k per year to $100k over the next three years and the annual cap of two applications per company has been removed. The Double Tax Deduction Scheme for Internationalisation (DTDi) which helps defray costs by granting companies up to 200% tax deduction on international market expansion expenses, has been extended for another five years until 31st December 2025. The list of qualified activities has also been expanded to include third-party consultancy costs and logistic costs for business missions. To help SMEs transform digitally, the Grow Digital initiative was launched under the SMEs Go Digital programme, alongside the Digital Resilience Bonus for Food Services and Retail businesses. GlobalConnect@SBF was also set up in partnership with Enterprise Singapore to assist local companies expanding to Southeast Asian markets and emerging markets by providing market advisory, networking opportunities and business matching. The Global Ready Talent (GRT) Programme will allow more graduates to take on work opportunities abroad and gain exposure to Southeast Asia, China and India.

Stronger through Transformation

Under Stronger through Transformation, a $300m top-up was made to the Startup SG Equity scheme which aims to encourage private sector investments into Singapore-based start-ups in emerging sectors such as Advanced Manufacturing, Pharmbio/Medtech, and Agri-food tech. The investment cap for each start-up was raised from $4m to $8m. The Agri-tech Regulatory Sandbox was established to streamline regulations and reduce compliance costs for leading high-tech farming operators to test-bed in the Agri-Food Innovation Park (AFIP), and hopefully commercialise their technologies. The Singapore Tourism Board (STB) has formed a Tourism Recovery Action Task Force (TRAC) to support the upgrade of hotel accommodations and tourist attractions during the Covid-19 period of low tourism activity.

Stronger through Innovation

Under Stronger through Innovation, the maximum funding support in the Productivity Solutions Grant (PSG) was raised to 80% from 1st April 2020 to 31st December 2020 to encourage firms to digitalise and improve productivity. The scope of solutions has also been to implement COVID-19 business continuity measures such as online collaboration tools, virtual conferencing tools, virtual meeting and telephony tools, queue management systems and temperature monitoring solutions. The Enterprise Leadership for Transformation (ELT) will be set up to allow enterprise leaders consult industry experts, Institutes of Higher Learning, and financial institutions on how best to develop and implement their business growth plans. The Heartland Enterprise Upgrading Programme ("HEUP") will be launched for the Merchant Associations to implement necessary infrastructural improvements, engage in place-making activities, improve enterprise capability and upgrade the workforce.

Stronger Together

Under Stronger Together, the Executive-in-Residence (EIR) programme was launched to help Trade Associations and Chambers facilitate companies and industries consult experienced professional in developing their business productivity and growth plans. The Consumer Empowerment Panel (CEP) was set up to work with associations, unions and grassroots leaders in addressing concerns regarding cost of living. The SG-Together Enhancing Enterprise Resilience (STEER) programme was set up to support business sustenance, business growth, and capability upgrading by matching up to 20% of total amount raised by industry-led funds such as the Trade Associations and Chambers (TACs), up to $1 million per fund.

Unlike the past, Singapore can no longer rely solely on tax incentives to attract foreign investment. She needs to build real and new capabilities, and leverage on her intangible strengths to attract foreign investments and anchor key economic activities. Singapore being an open, trusted united and stable society with a skilled workforce makes it an attractive investment site. However, this means that the retreat from globalisation, together with protectionism, by many countries during the COVID-19 pandemic means fewer and poorer quality jobs available for Singaporeans. To strengthen the nation's resilience, the Singapore government, has diversified supply sources and markets, and build extensive global networks. To instil and maintain trust in global partners, Singapore kept production lines open despite the COVID-19 lockdown, resisted impose export restrictions nor nationalise foreign investment for her own needs. Together with the establishment of new Free Trade Agreements (FTA) with other countries, Singapore will be an attractive destination for foreign investments. Singapore will continue to invest on connectivity infrastructure to reinforce its position as a global hub for business, finance, trade and data flows. This also includes attracting the best talents and ideas to grow businesses and create better jobs for Singaporeans. To prepare for the digital world, there will be ample training for all Singaporeans and assistance to help businesses with digital transformation to seize the opportunity in the post-pandemic economic recovery.

5 Four Special COVID-19 Budgets

The COVID-19 pandemic is expected to bring about hardships globally. The IMF[31] expects the global recession brought about by the pandemic to be worse than the 2008 Global Financial Crisis, with global growth to be -4.8% in 2020, and low-income households will be adversely affected, especially those working in informal sectors or are migrant workers, and school closures are likely to have disproportionately negative effects on earnings prospects of children from low-income countries.

Singapore being an open economy that is highly integrated with the global economy will not be spared. The most badly affected sectors are the aviation and tourism sectors, as international travel comes to a halt and visitor arrivals fell sharply. Even the food services, retail trade, and land transport was significantly affected as circuit breaker measures were implemented to slow the spread of the virus. As global external demand falls, manufacturing and wholesale trade are not spared either as supply chains get disrupted.

To enable Singapore to tide through the crisis, four special COVID-19 budgets were passed by the Singapore government to save jobs and protect livelihoods by helping enterprises overcome economic woes brought about by the pandemic, and subsequently build a social and economic resilient Singapore. The four budgets are Unity Budget passed on 18 Feb 2020, Resilience Budget passed on 26 Mar 2020, Solidarity Budget passed on 06 Apr 2020, and Fortitude Budget passed on 26 May 2020.

To protect the livelihoods of all Singaporeans, the government initially pledged to pay 8% of first $3,600 of monthly salaries for 3 months, which was later increased to 25% of first $4,600 of monthly salaries for 9 months, then 75% for 8 months and 25% for the 9th month, and finally extending the payment by one more month. Furthermore, $800 million have been set aside to help the lower and middle-income groups like allowances of $800 a month for 3 months for these groups who lost job due to COVID-19. Workfare, which is a form of income supplement will see eligible recipients receive a one-time cash payment of $3,000 and an additional 20% in Workfare payments. All in all, this unemployment insurance will greatly benefit those of lower socio-economic status and reduce inequality.

Eligible self-employed persons, an often-neglected group, will receive $1,000 a month for up to 9 months which was later enhanced to $3,000 for the months of May, July and October. On the community front, over $1 billion has been set aside for Community Development Councils and self-help groups to tap on.

In the spirit of the Singapore's government push to upskilling, all Singaporeans will receive a top-up of $500 SkillsFuture credits. Firms will be provided with hiring incentives of 20% of monthly salary up to 6 months for local workers under 40, and 40% for local workers over 40. Training allowances of $1,200 per month for the entire duration of course will also be provided to encourage firms to seize the opportunity to retrain employees. This will equip local workers with the necessary skills to tackle the challenges posed by the new post-pandemic economy in the digital age as highlighted in previous sections.

For firms, bridging loans have been extended to distress industries and sectors, along with rental waivers and Foreign Worker levy waivers. To boost employment, the government intends to create

[31] Source: https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020.

40,000 jobs over the next one year with 21,000 traineeships for local first-time job seekers, as announced in the budgets.

The four special COVID-19 Budgets address not just immediate and short-term concerns but plan for the recovery and growth in the future. Close to $100 billion or about 20% of Singapore's GDP will be committed to support Singaporeans, and the overall budget deficit for 2020 will be $74.3 billion; $52 billion is planned to be drawn from past reserves. Fiscal prudence since independence in 1965 together with economic prosperity have accumulated reserves sufficiently that Singapore may now tap on, implying a cross generational transfer.

6 Analysis Using Model

This section will use the model developed in section 3 to analyze important events leading to the evolution of inequality and upward mobility in the past as well as in the future of Singapore possibly. We will first examine how a heavy reliance on migrant workers, followed by a cut in the influx, would change inequality and upward mobility. COVID-19 has highlighted the adverse impacts on the less privileged individuals and households, who have less resources to deal with the current crisis or even to prepare for the post-pandemic economy on their own grounds, and consequently, there might be a shift in social preference towards more redistribution, concern for others, also evident from the progressive government interventions during the crisis. Will fiscal redistribution necessarily bring about a tradeoff between efficiency and equity? The answer is no if there is early intervention in the education of children from low-income families, who enjoy higher rates of return in educational investments. Human capital investment is linked to jobs opportunities in the future (which comes with much uncertainty and technological disruptions) and that will be our last analysis in this section.

6.1 Influx of Migrant Unskilled Workers

Migrant unskilled workers have contributed much to the economy of Singapore for the past few decades, working mainly in basic or essential services such as domestic helpers, construction workers, production workers, cleaners, and labourers, occupations that the resident working persons are not taking up, as documented in Figure 1.8 and Figure 1.9, especially for the younger and educated residents because their reservation wages are much higher than the migrant workers. For example, Figure 6.1 shows that construction workers in Singapore were mainly foreign workers for the period 2009 to 2019.

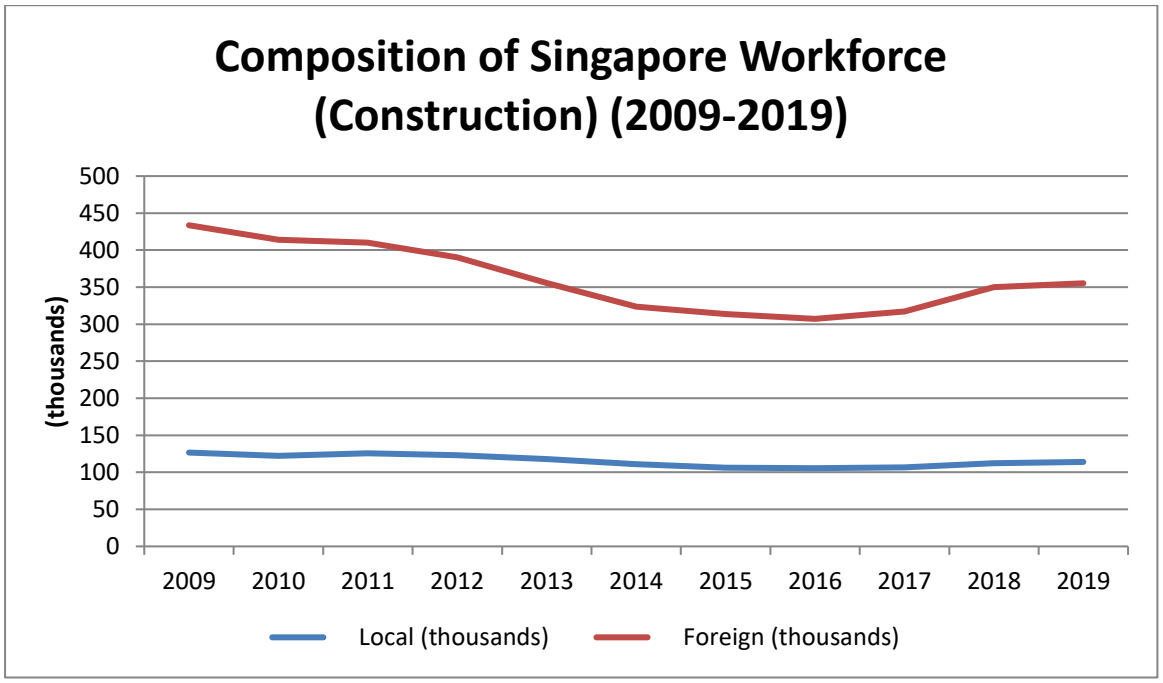

Figure 6.1: Composition of Singapore Workforce (Construction) (2009-2019)[32]

[32] Source: Ministry of Manpower. See https://stats.mom.gov.sg/Pages/Employment-Summary-Table.aspx.

Table 6.1 shows the breakdown of the labour force in Singapore for selected years from 1991 to 2019 by residential status. In 1991, the share of non-resident workers was about 18 percent; in 2019, the share has gone up to about 38 percent. Among the non-resident workers, there are skilled workers such as those with Employment Passes and S Passes while those with Work Permits are primarily lower or unskilled, comprising foreign domestic workers, construction workers, and other Work Permit holders. What is the share of unskilled workers among the non-resident workers?

Year	Total (thousands)	Residents (thousands)	Residents (%)	Non-Residents (thousands)	Non-Residents (%)
1991	1,673.7	1,372.9	82.03%	300.80	17.97%
1996	2,024.9	1,511.5	74.65%	513.40	25.35%
2001	2,330.5	1,644.3	70.56%	686.20	29.44%
2006	2,594.1	1,880.8	72.50%	713.30	27.50%
2010	3,135.9	2,047.3	65.29%	1,088.60	34.71%
2015	3,610.6	2,232.3	61.83%	1,378.30	38.17%
2019	3,740.8	2,328.5	62.25%	1,412.30	37.75%

Table 6.1: Workforce Composition of Singapore from 1991 to 2019 (selected years)[33]

Table 6.2 shows the breakdown by skill levels of the non-resident workers for the recent years 2014 to 2019. Now, we take those with Work Permits as unskilled foreign workers and those with Employment Pass (EP) and S Pass as skilled foreign workers and define the share of unskilled foreign workers as Work Permit holders over sum of Work Permit, EP and S Pass holders. The last row of Table 6.2 shows the share of unskilled foreign workers computed for end of 2014 was about 74 percent and it was about 72 percent end of 2019, showing the significant contribution of unskilled foreign workers to the economy of Singapore.

Pass Type	Dec 2014	Dec 2015	Dec 2016	Dec 2017	Dec 2018	Dec 2019
Employment Pass (EP)	178,900	187,900	192,300	187,700	185,800	193,700
S Pass	170,100	178,600	179,700	184,400	195,500	200,000
Work Permit (Total)	991,300	997,100	992,700	965,200	972,600	999,000
- Work Permit (Foreign Domestic Worker)	222,500	231,500	239,700	246,800	253,800	261,800
- Work Permit (Construction)	322,700	326,000	315,500	284,900	280,500	293,300
Other Work Passes	15,400	23,600	28,300	30,700	32,100	34,700
Share of Unskilled Foreign Workers	73.96%	73.12%	72.74%	72.18%	71.84%	71.73%

Table 6.2: Breakdown of Foreign Workers in Singapore from 2014 to 2019[34]

Now, we will attempt to use our model to understand the impact on inequality and social mobility given the heavy reliance on foreign or migrant unskilled workers in Singapore. An increase in the inflow of migrant unskilled workers will decrease the cost of business and increase the profitability of

[33] Source: Ministry of Manpower. See https://stats.mom.gov.sg/iMAS_Tables1/Times%20Series%20Table/mrsd_1_Overall_res_labour_force_15Jan2020.xlsx.
[34] Source: Ministry of Manpower. See https://www.mom.gov.sg/-/media/mom/documents/statistics-publications/foreign-workforce-numbers.xlsx.

such firms in Singapore, even though they might not be as productive or innovative as their counterparts in other countries without a heavy reliance on cheap migrant workers. Taking a simple extension of the basic model that the profits or capital income will benefit the skilled parents much more than the unskilled parents, and that the unskilled parents may face borrowing constraint in the human capital investment of their children, the demand curve for upward mobility for the economy-society will shift to the left as a result, depicted in Figure 6.2. Holding intact the "supply" curve, which is the labour market clearing condition for the skilled relative to unskilled, the ensuing equilibrium will have higher inequality and lower upward mobility.

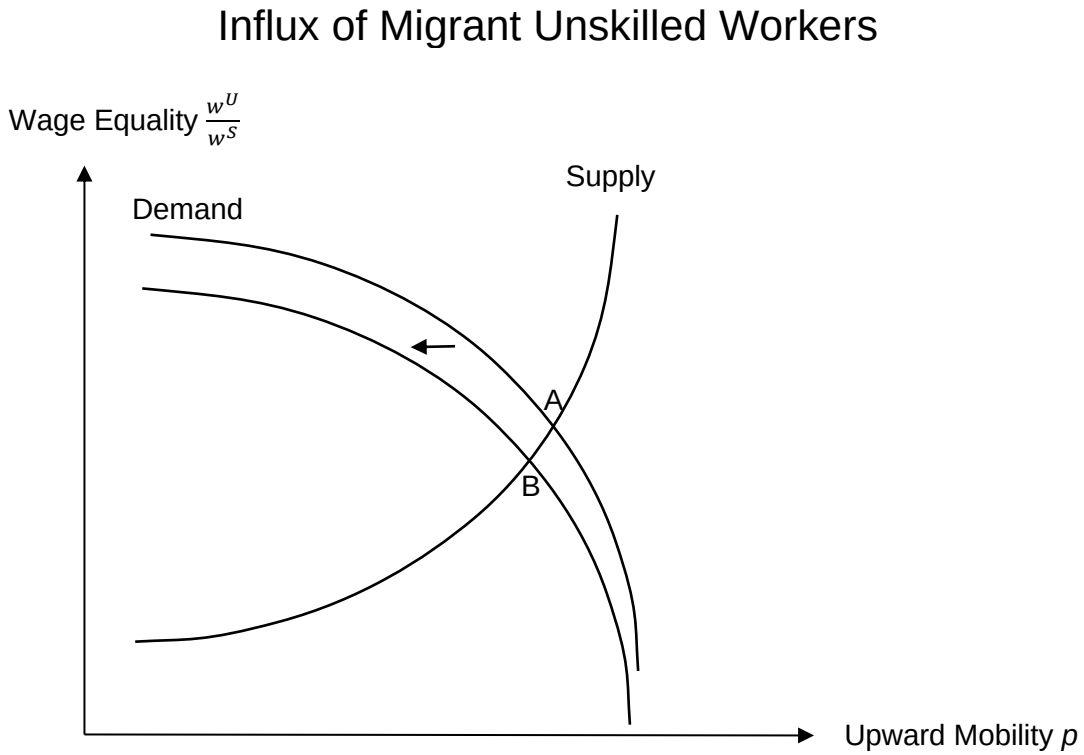

Figure 6.2: Reduction of Migrant Unskilled Workers

6.2 Reduction of Migrant Unskilled Workers

COVID-19 pandemic hit Singapore, affecting especially migrant unskilled workers living in dormitories. As of 12pm, 29th May 2020, there were 33,860 confirmed cases[35], out of which about 93 percent were migrant unskilled workers living in dormitories. Suppose, a reconsideration of the reliance on migrant unskilled workers, trickled by COVID-19, leads to a cut in the influx of migrant unskilled workers providing essential services in Singapore; what will be the impact on inequality and mobility in Singapore?

Business cost will likely increase, firms will need to transform their operations, to hasten the processes of automation, digitization, and enhance productivity with a lower reliance on workers. The less efficient firms will be replaced by the more competitive and innovation firms. In the short term, low-income families might be affected by a higher cost of living, much more than the high-income families relatively, leading to a possible leftward shift of the demand curve. However, in the long term, the temporary leftward shift can be more than offset by a rightward shift due to competition and

[35] Source: Ministry of Health. See moh.gov.sg

innovation in the firms (or equivalently a reduction in rent-seeking activities as in the simple model) and the lifting of a potential cap on unskilled wage.

Alternatively, and conceptually, we may take the simple model to illustrate a case of distortion with a large influx of migrant unskilled workers initially, as depicted in Figure 6.3. The horizontal line represents a policy induced wage equality $\frac{w^U}{w^S}$, assumed fixed below the intersection point, with p^* being the desired upward mobility based on parental optimization, and the actual p_1, equivalent to the relative supply of skilled to unskilled, being much lower because of the large influx of migrant unskilled workers in the economy.

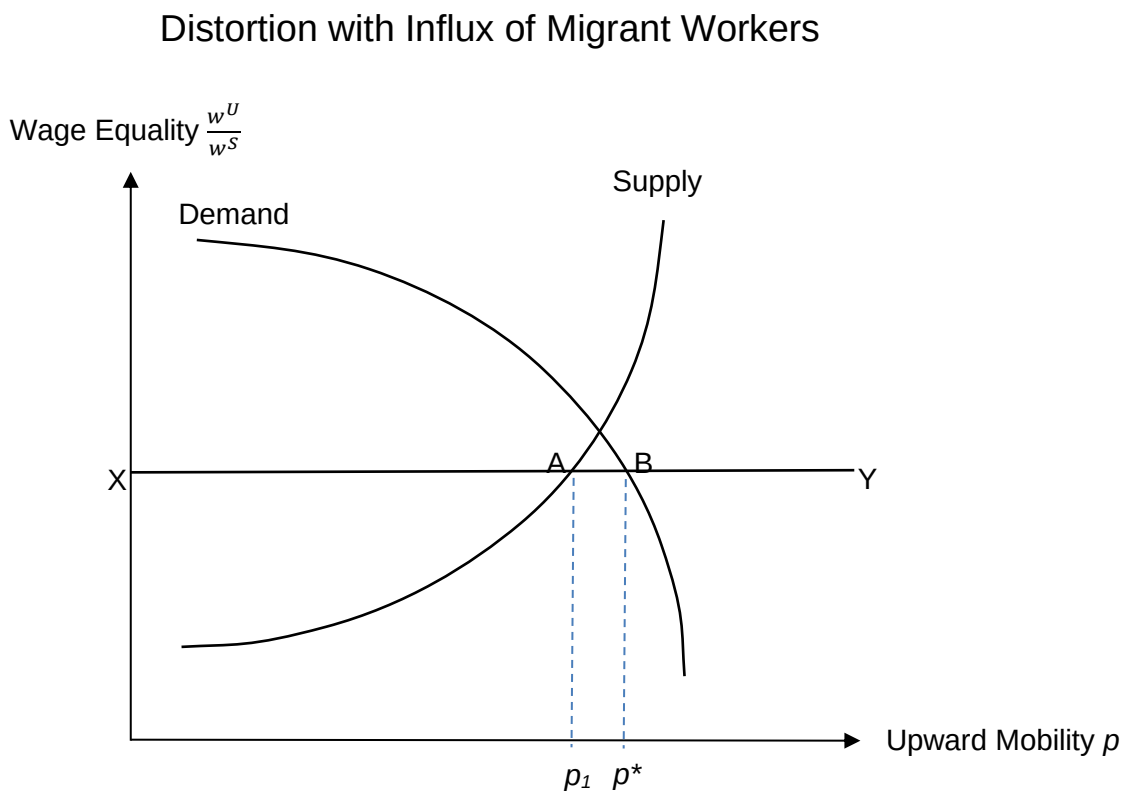

Figure 6.3: Distortion with Influx of Migrant Workers

Now, a reduction in the reliance on migrant workers is represented by an upward shift in the horizontal line XY (assumed to be an exogenously given policy line), narrowing the gap between p_1 and p^*, rising wage equality or reducing wage inequality in the process. Actual upward mobility p_1 will increase as a result.

6.3 Preference Shift towards Equity

Singapore's level of inequality was likely a reflection of her social preference or even an optimal level of inequality. Given the nature of openness of the society-economy, either degree of globalization in trade, investment, or global mobility of people and contribution of foreign workers to her economy, Singapore could have desired a slightly high level of inequality, favoring the positive influence of inequality in terms of incentives to work hard and to move up the social ladder. Schöneck and Mau (2015), using data from the European Social Survey 2008/2009, found that welfare state support was generally lower in globalized countries, and the low-skilled generally had a higher preference for

income redistribution and a higher general support for the unemployed, as compared with the high-skilled. Nonetheless, the support for income redistribution and unemployment benefits declined as the degree of globalization increased, for both low-skilled and high-skilled workers. Based on the findings of Schöneck and Mau (2015), we may hypothesize that a highly globalized Singapore might desire a lower level of redistribution and will a relatively high level of inequality in the past, especially during years of high growth rates. Would that social preference change?

The COVID-19 pandemic in Singapore which affected mainly the migrant workers had a more severe impact on the less-to-do Singaporeans. For example, COVID-19 Social Data Bank of the Social Service Research Centre at the National University of Singapore, via their Facebook posts[36], highlighted the major problems faced by them: financial difficulties, emotional distress, employment challenges, mental health conditions, and caregiver fatigue or spousal abuse. About 56% had a fall in household income due to Convid-19, 66% listed mental well-being as a major challenge, and 30% cut down expenses. Fortunately, 54% of them received formal financial assistance from the government.

Also, the children of the poorer households faced more challenges in home-based learning due to a lower level or lack of digital resources, physical learning space at home, and coaching from parents[37]. These reports in the public domain would raise more awareness and might bring about a shift in social preference towards more concern for the disadvantaged families, a more compassionate view about inequality and its determinants, or even a shift in preference for redistribution. We also see that the government has various budget announcements and policies to deal with the impact of COVID-19 as well as building capabilities post pandemic, with many measures assisting the disadvantaged, consistent with a possible change in social preference.

We will now use the model we develop here to examine a possible shift in preference towards less inequality. The demand curve, representing the parental optimization, may be extended to reflect a preference for inequality or equality. An increased desire for equality will shift the demand curve up. Similarly, a more progressive government policy, or more redistribution, or a higher level of public subsidy in educational investment (versus relying on parental resources), benefiting the disadvantaged families more, would also shift the demand curve up and to the right, as depicted in Figure 6.4. The new equilibrium will bring about higher upward mobility and lower inequality.

[36] See www.tinyurl.com/CSDBoutout1, www.tinyurl.com/CSDBoutput1.
[37] See, for example, https://www.straitstimes.com/lifestyle/how-home-based-learning-hbl-shows-up-inequality-in-singapore-a-look-at-three-homes.

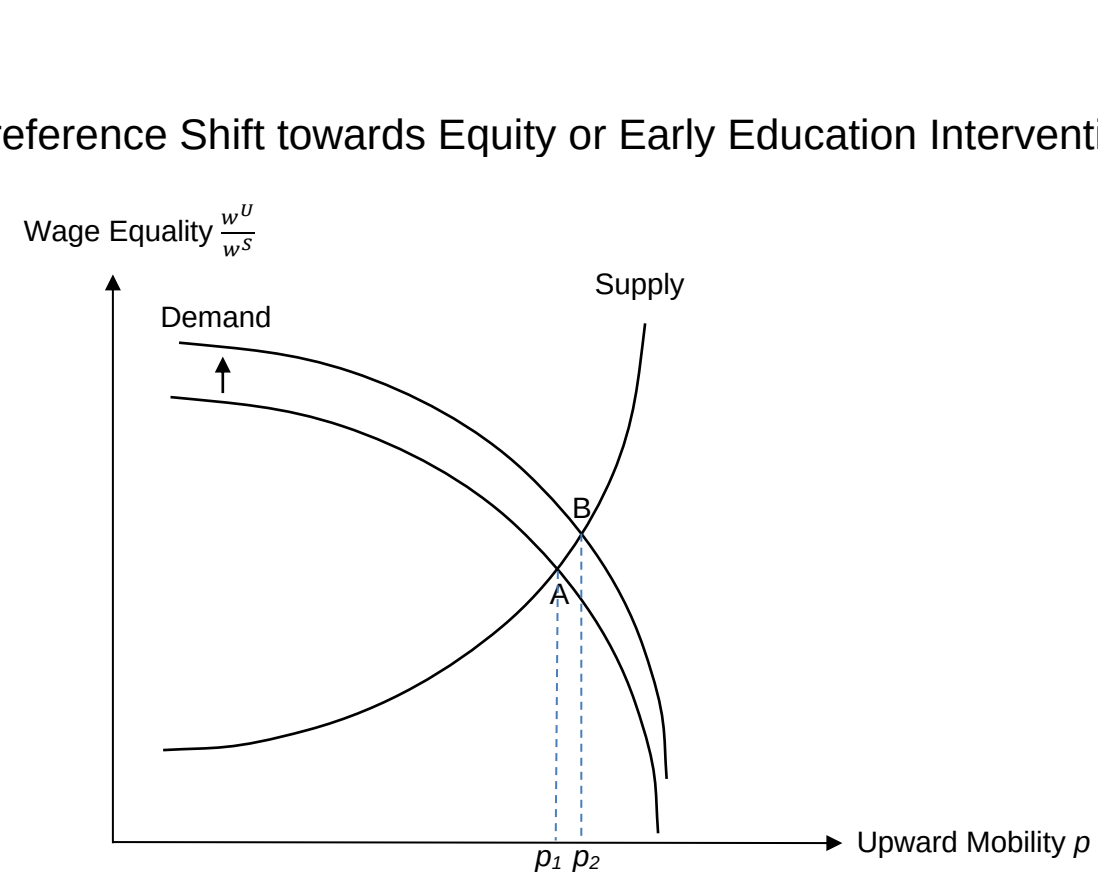

Figure 6.4: Preference Shift towards Equity or Early Education Intervention

6.4 Early Intervention in Pre-School Education

Early intervention is important increasing social mobility and reducing inequality. This is echoed by Heckman (2011). Investments in early childhood education, particularly children from disadvantaged families, can reduce the negative social and economic impact of inequality. Magnuson and Duncan (2016) found strong evidence that quality early childhood education can improve the academic skills and development of children, and that participation in pre-schools is likely to result in higher income later in life. In Singapore, the government pledged to invest and double its budget on the pre-school sector to $1.7 billion by 2022 and open 40,000 more childcare places.

The Early Childhood Development Agency (ECDA) was setup in 2013 to enhance social mobility and reduce inequality by integrating the administration and regulation of the preschool sector so that every Singaporean child has a good start with access to quality early childhood development services, with means-tested but generous subsidies.

Using the model developed here, the intervention in the human capital investment in early childhood via ECDA, in terms of public subsidy and raising efficiency and even social returns to education, will shift the demand curve up and to the right, as depicted in Figure 6.4, the same diagram used earlier.

6.5 Skills for the Future

The nature of jobs, and future jobs, is changing rapidly and becomes more obvious as a result of the impact of COVID-19 in Singapore. According to OECD (2019)'s *OECD's Employment Outlook*

2019: The Future of Work[38] warns that disruptions to jobs and business processes are more severe compared to the past because of faster penetration of technology and society becoming more integrated. Coupled with an aging population in many OECD countries, there will be increased migration pressures. Of importance is that while unemployment in many countries have not increased, under-employment is increasing. Wages have been stagnant for many people over the past ten years, job security and quality of jobs have decreased, and temporary employment is on the rise.

The growth process in the future is likely skill-biased related to digitalization, robotization, and a more prevalent use of Artificial Intelligence for higher-order decisions. Demand for skilled will increase and the question is whether the supply of such skilled workforce will increase as well, resulting in either a more severe increase in inequality or a more moderate increase. Increase in the supply of skilled will induce increase in demand for skilled, as in Ho and Hoon (2003) as Singapore moved up the value chain of global production and Acemoglu (2002) as G5 countries engaged in R&D activities.

Now, if the public investment in human capital is more for the masses, or more progressive or benefiting the lower-skilled much more, in the preparation for the future jobs, the demand curve in our model will shift right, meaning that the government policy and subsidies will counter the skill-biased transformation which tends to shift the demand curve to the left, as depicted in Figure 6.5. The ensuing equilibrium depends on the relative strengths of the two shifts. In other words, the skill-biased process will shift the demand curve to the left, and if the progressive public investment counters with a rightward shift, and overwhelms the leftward shift caused by the technological change, the ensuing equilibrium might have a higher upward mobility and a lower inequality, as in Figure 6.5.

[38] See https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2019_9ee00155-en.

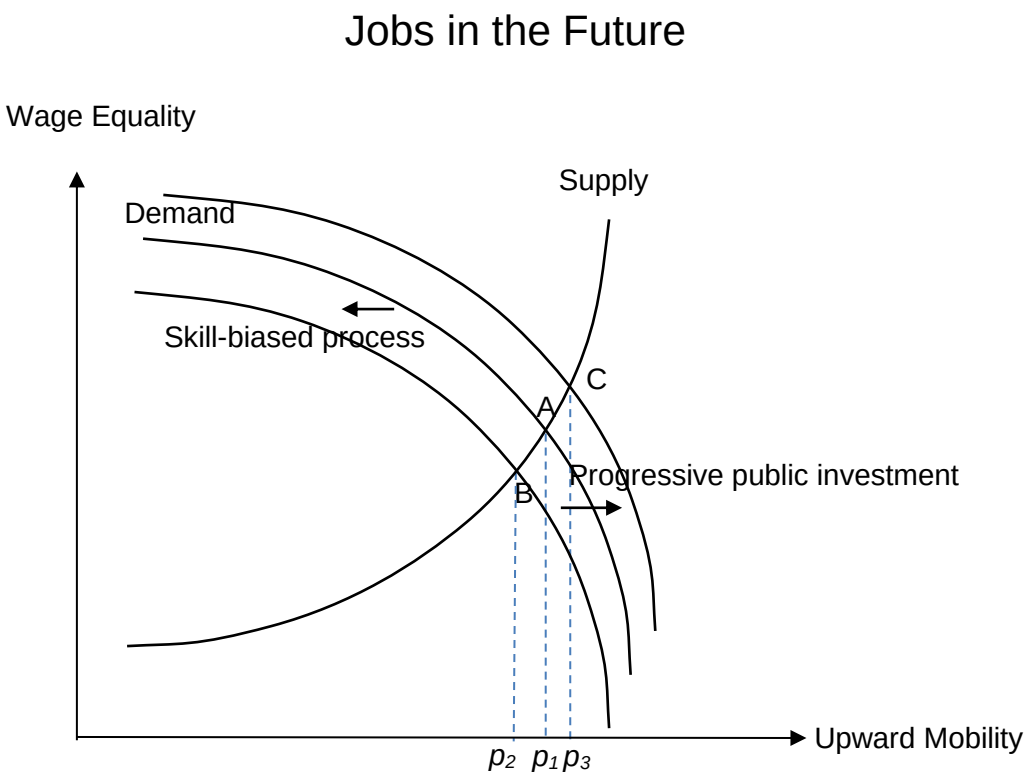

Figure 6.5: Jobs in the Future

How is Singapore preparing for jobs in the future? Launched in 2015, SkillsFuture is an initiative to make Singapore a more inclusive society by reskilling and retraining all Singaporeans regardless of their socio-economic status or background. Some of the key goals of SkillsFuture are to allow individuals make informed choices in a high-quality education system and foster a culture of lifelong learning with employer recognition and support for lifelong learning. The subsidies given by SkillsFuture go to Singaporean workers directly as well as firms which send Singaporean workers for training and which invest in transformation of their operations.

As the various schemes and programs of SkillsFuture have just started and yet to be evaluated in terms of the desired outcomes such as productivity gains, job transitions, and preparation for future changes, it might be too early to hypothesize whether SkillsFuture will shift the demand curve of our model to the right-hand side.

Tan (2017) argues that the culture of emphasis on academic qualification rather than vocational training in Singapore hinders the intention of SkillsFuture to cultivate lifelong learning. We would suggest that it is important to investigate if SkillsFuture is pushing Singaporeans sufficiently in attaining the skillsets desired by the industries of the future.

Woo (2018) notes European Union (EU) member states have schemes similar to those of SkillsFuture, but they focus mainly on labour policy outcomes; in contrast, the SkillsFuture scheme involves a broader array of policy instruments that target a wider range of beneficiaries and stretches over a longer-term horizon. We would suggest that both short-term desirable outcomes and longer-term objectives have to be tracked and evaluated for SkillsFuture.

Preparing for jobs in the future needs a preparation starting for the primary schools as well and the Ministry of Education has various plans put in place or rolled out. For example, the Student Learning Space (SLS) online learning portal available to all primary schools, up to pre-universities in Singapore, facilitates self-directed learnings among students, collaboration among educators, and pooling of resources. Coding for Fun via visual programming-based lessons will be offered to all primary school pupils beginning in 2020. Also, the use of personal learning devices in secondary schools starts in June 2020. Financial assistance given to the disadvantaged families and children in the technology driven learning process will be important and will bring about inclusive outcomes for the society. As for tertiary students, in addition to job internships, the importance of overseas exposures and exchange programmes cannot be under-stated, and low-income families may need financial assistance in this area.

7 Challenges to Social Mobility

In the past, Singapore has had high upward mobility because the starting base of the economy is low when Singapore was emerging as an undeveloped nation. But as Singapore progresses towards being a developed nation, she will face challenges in achieving inclusive growth, curbing threats of rising inequality, while maintaining high social mobility. This section will discuss three main areas of challenges: future growth prospects and processes, fiscal sustainability expecting greater social spending, and opportunities of the middle-income class together with other familial challenges in Singapore.

7.1 Growth Prospects and Processes

Singapore lacks a hinterland which allows mobility of people and economic activities, especially from rural areas to the city facilitating intra-generational social mobility. Coupled with a rapidly ageing population, an increasing pool of unskilled older workers and intensified competition from other rapidly growing cities, Singapore is experiencing diminishing growth in recent years as its economy matures. To further add, retiring individuals are unable to retire in cheaper rural area for a city-state like Singapore. To counter the decline in economic growth, the Singapore government introduced growth-oriented policies to enhance the competitiveness of Singapore which include attracting of skilled foreign talent, development of Singapore's global financial market, research and development, and life sciences. However, these policies are inevitable skill-based and skill-based growth policies benefitting the skilled are likely to put the immobile unskilled in a disadvantageous position.

Diminishing Economic Growth

Real GDP growth in Singapore has been tremendously well compared to similar peers e.g. Hong Kong as evident in Figure 7.1. However, real GDP per capita growth in Singapore has been plateauing in recent years, exhibiting a pattern the same as advanced and mature economies after the phase of catch-up growth, as seen in Figure 7.2.

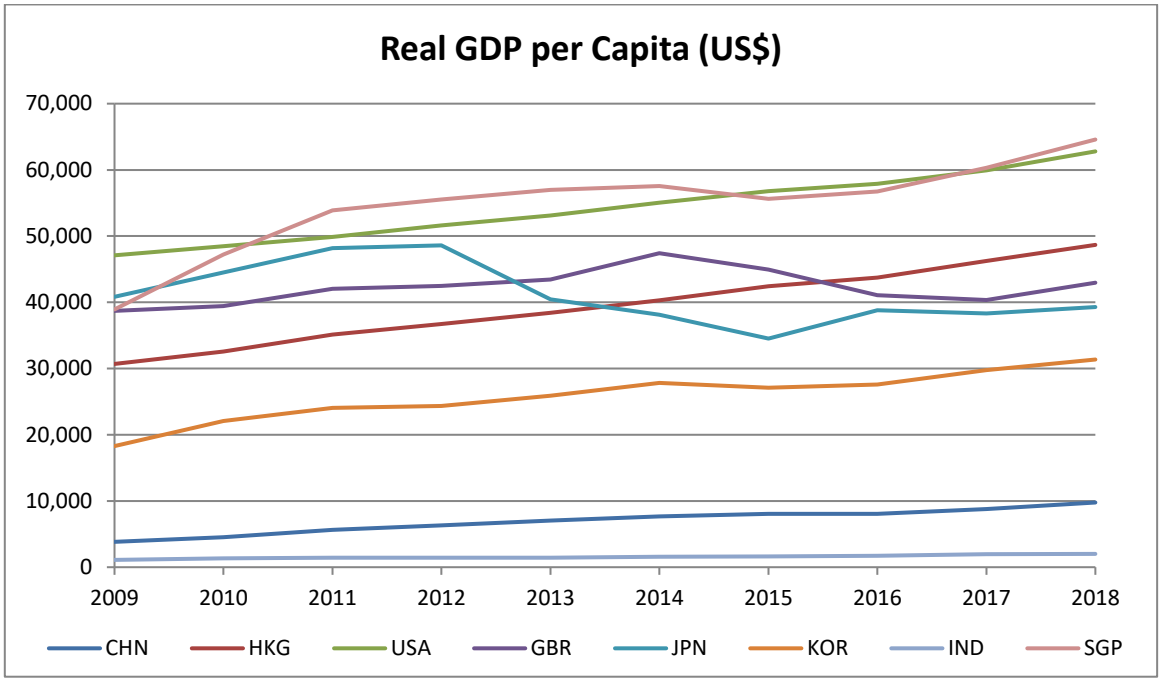

Figure 7.1: Real GDP per Capita of various Countries (US$)[39]

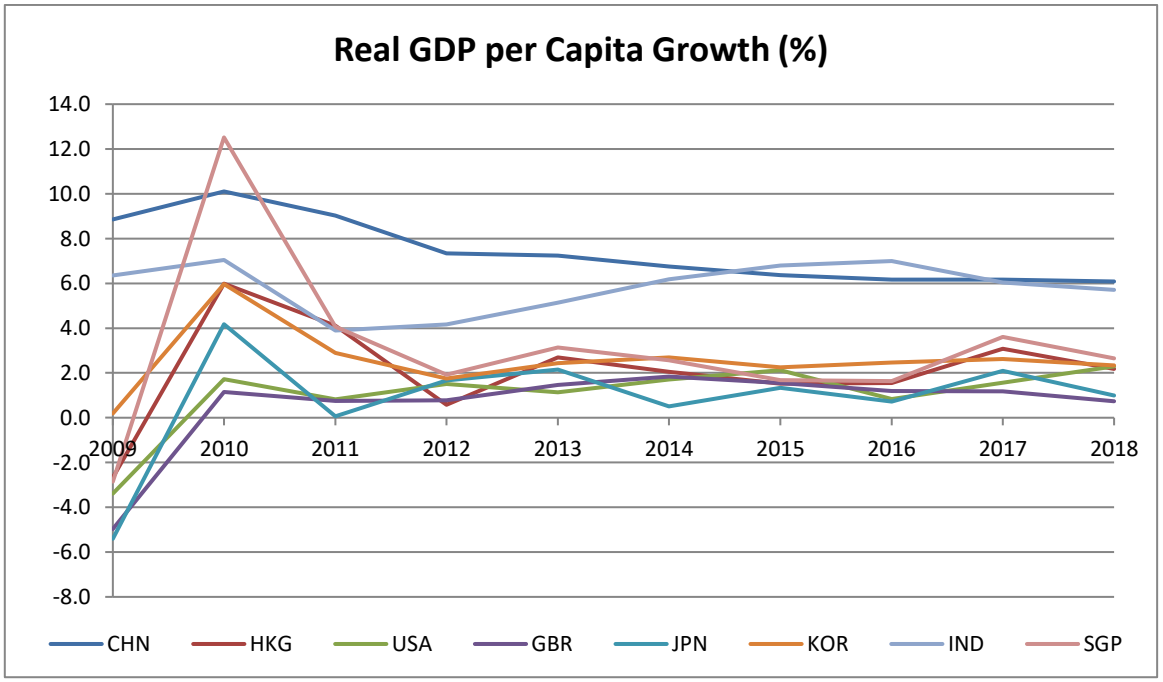

Figure 7.2: Real GDP per Capita Growth of various Countries (US$)[40]

[39] Source: World Bank. See http://api.worldbank.org/v2/en/indicator/NY.GDP.PCAP.CD?downloadformat=excel.

Dwindling Productivity

Lee and Morris (2016) acknowledged that Singapore continued to construct a comprehensive system of lifelong learning with Workforce Singapore (formerly known as Singapore Workforce Development Agency (WDA)) tasked to oversee nation-wide Lifelong Learning Initiatives. However, the increase in funding has not been accompanied by a similar increase in participation rates and training intensity (which measures mean training days per adult) has declined since 2010. To make matters worse, Singapore's rate of productivity growth fell from 5.2% in the 1980s to 3.1% in the 1990s and then to 1.8% in the 2000.

As shown in Figure 7.3, productivity growth in Singapore has not kept up with real GDP growth from 2000 to 2019.

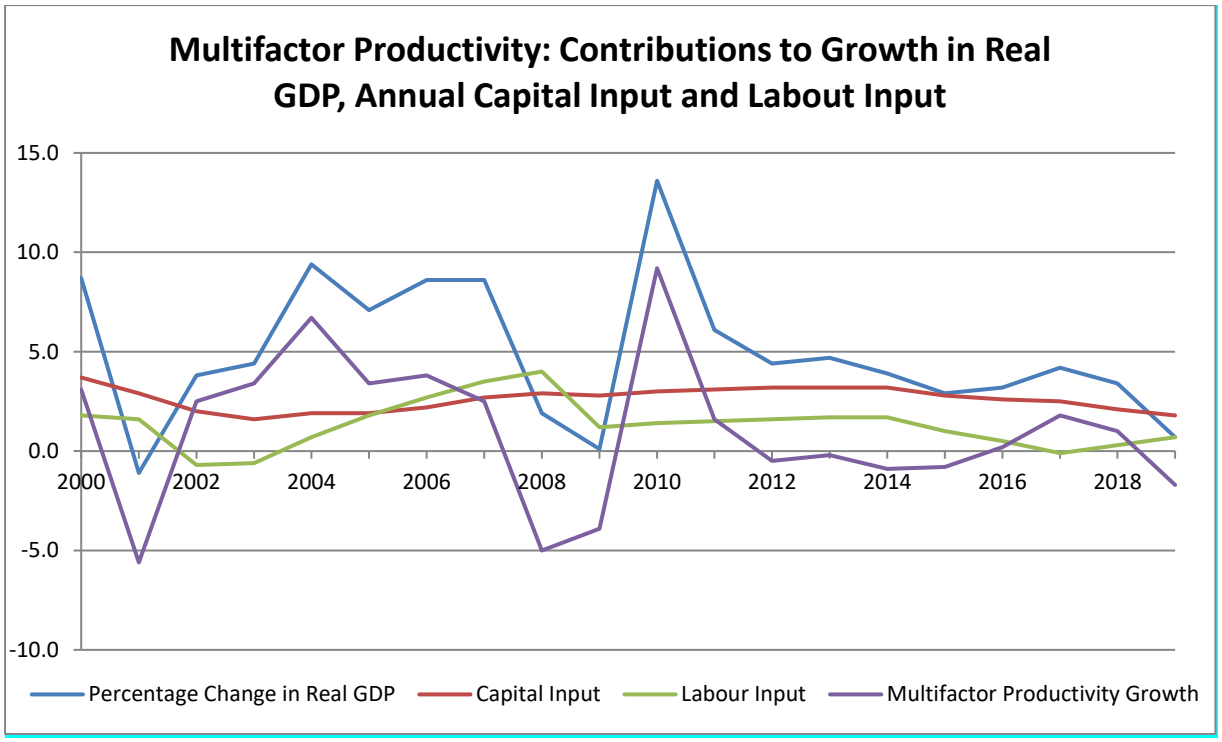

Figure 7.3: Multifactor Productivity Growth for Singapore[41]

Teo (2015) argued that subsidizing companies' payrolls to low-wage workers is unlikely to trigger much effort to improve productivity since the rise in pay is not at the cost of employers' profits. Without sustained productivity gains, then, it seems unlikely that wage increases will be maintained if or when state subsidies are removed. Furthermore, the heavy reliance on migrant unskilled workers could be a reason for the low productivity; for instance, using firm level data from Korea, Malaysia, and Thailand, which are the four major labour-receiving countries in East Asia and the Pacific, Ahsan

[40] Source: World Bank. See http://api.worldbank.org/v2/en/indicator/NY.GDP.PCAP.KD.ZG?downloadformat=excel.
[41] Source: Department of Statistics Singapore. See http://www.tablebuilder.singstat.gov.sg/publicfacing/downloadMultiple.action?id=45.

et al. (2014) found that firms clearly enjoy higher profits because of lower wages that more than compensate for any decline in labour productivity in the short term.

Can lifelong learning enhance productivity of workers? Lee and Morris (2016) acknowledged that productivity rates have not improved despite significant expansion of lifelong learning provision in Singapore. Facing more restricted opportunities, the low-skilled had a comparatively low level of participation in lifelong learning programmes. Also, lifelong learning programmes and initiatives offered by the government are found to be more favourable to and catering more for high-skilled workers, unintentionally worsening inequality.

Openness to Immigration

Singapore has one of the highest immigrants-to-total population ratios. Using data from Singapore, Hong Kong and Taipei, Tai (2006) found that urban regimes and social policies lead to the formation of social inequality and marginal urban populations. In Singapore, there had been active recruiting of global talent who may settle down as residents, while low-skilled migrant workers for economic expansion like construction and other essential services, as well as household works, work and stay in in Singapore for a temporary period. Using disaggregated panel data of the manufacturing sector in Singapore from 1998 to 2008, Thangavelu (2016) observed a decrease in capital-labour ratio with increases in the flow of foreign workers, implying that workers might be producing output with less technology-intensive capital; interestingly, local workers, being more skilled, are more productive with high capital investment, implying more complementarity between capital investments and local human capital. Tan et al. (2001) estimated a contribution of 36.9% by Employment Pass (EP) holders to GDP growth from Q1 1991 to Q4 2000; the contribution of foreign skilled workers might remain significant though smaller because of the overall continual upskilling of Singaporeans.

The challenges faced are thus to enhance the productivity of local workforce as we prepare for a reduction in the reliance on migrant unskilled workers and to have a more refined selection of foreign professionals.

7.2 Fiscal Sustainability

Singapore has managed her fiscal position well since her independence in 1965; in fact, given past economic prosperity, fiscal prudence, and government policies facilitating the accumulation of human capital and physical capital, Singapore has been accumulating foreign reserves, and at end of May 2020, the preliminary Total Official Foreign Reserves stand close to US$301 billion.[42] The overall budget balance (as a percent of GDP) from 1997 to 2020 is depicted in Figure 7.4. We see that for most of the years, Singapore has positive balances, and for 2020, due to COVID-19, the estimated overall balance is about -2.1% of GDP, or an amount close to -$11 million.

Expecting larger social spending in the future, and greater uncertainty in the global economy as warned by IMF's World Economic Outlook Update June 2020[43], entitled *A Crisis Like No Other, An Uncertain Recovery*, fiscal sustainability is indeed a challenge in the future for not just Singapore, but also many other countries.

[42] Source: https://www.mas.gov.sg/statistics/reserve-statistics/official-foreign-reserves.
[43] Source: https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020.

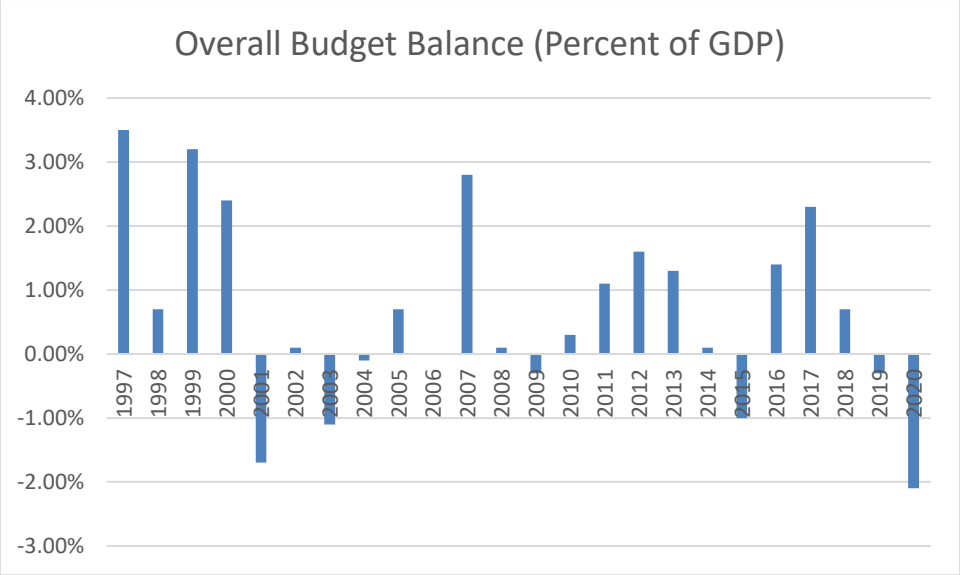

Figure 7.4: Overall Budget Balance of Singapore, 1997 to 2020[44]

Tax Structure

The tax structure in Singapore is progressive as the share of taxes paid by Singaporean households increases progressively in the income deciles (depicted in Figure 7.5), and the share of transfers received by Singaporean households decreases in the income deciles (depicted in Figure 7.6).[45]

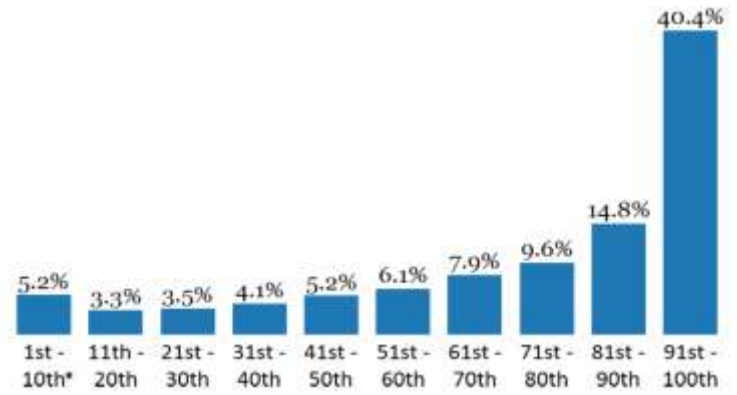

Figure 7.5: Share of taxes paid by Singaporean households (2014) [46]

[44] Source: https://data.gov.sg/dataset/government-fiscal-position-annual?resource_id=98856a60-33cd-482a-9dc4-1ed52e562d5d. The figure for 2019 is a revision while that for 2020 is an estimate.
[45] The first decile of households (by incomes per member) paid a higher proportion of taxes than the second decile. This arises because not all the households in the first income decile are poor as they can be retirees without income who stay in higher-end residential properties. This can be seen from the profile of the first decile households: 16% of them live in private properties, 13% in HDB 5-room and Executive flats, 14% own cars, and 10% employ a maid.
[46] Source: Singapore Ministry of Finance (2015): Income Growth, Inequality and Mobility Trends in Singapore

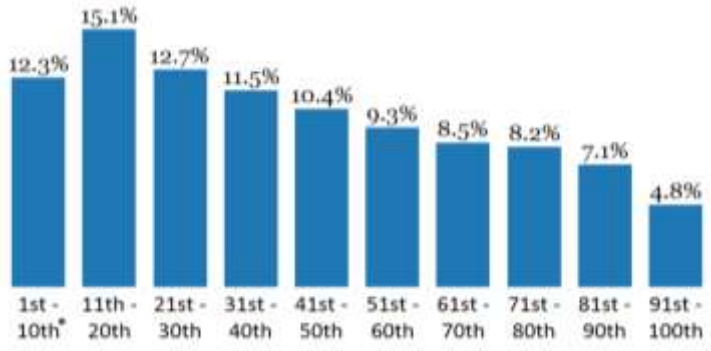

Figure 7.6: Share of transfers received by Singaporean households (2014) [47]

The absence of any taxation on assets or capital gains might contribute to a growing level of capital inequality, which Piketty (2014) argues, is a greater risk to societies than income inequality. However, avoidance of tax on these types of assets could make such taxes ineffective. For the case of Singapore, property tax is progressive, with higher rates imposed on residential properties with higher annual values.

The Goods and Services Tax (GST) is expected to be raised by 2021 from the current 7% to enlarge the tax base, as we foresee larger social spending. As a consumption tax, GST in regressive in nature. To counter such a negative impact especially on low-income households, GST vouchers and support packages in the form of S&CC Rebates, Care & Support, Workfare Special Payment, Grocery Voucher, etc, all progressive in nature, are given to households.[48]

Human Capital Deficit

The United Nations (UN) projects that 47% of Singaporeans will be aged 65 years or older in 2050. In particular, the proportion of elderly women is higher, and they traditionally earn & save less. The young in Singapore are financing the retirements of the elderly, indirectly through housing appreciation which is not sustainable. Figure 7.7 shows the Old-Age Support Ratio for Singapore.

[47] Source: Singapore Ministry of Finance (2015): Income Growth, Inequality and Mobility Trends in Singapore
[48] Refer to https://www.gstvoucher.gov.sg/Pages/Index.aspx for the latest packages.

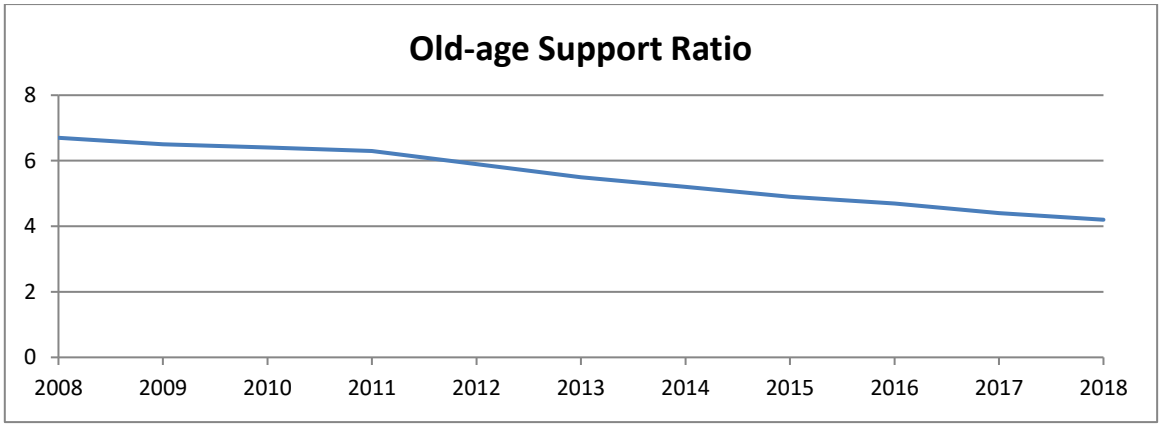

Figure 7.7: Old-age Support Ratio: Citizens Aged 20-64 Years Per Citizen Aged 65 Years & Over (Per Citizen Aged 65 Years & Over) [49]

Lee et. al. (2016) pointed out that changes in the population age structure can have a significant effect on fiscal sustainability as they may affect both government revenues and expenditures: social spending on elderly will increase while economic growth and revenues may decrease. They found that fiscal sustainability of rapidly ageing economies of Korea, Japan, Taipei, and China are likely to deteriorate under their current tax and expenditure systems.

K. H. Ng (2011) pointed out that Hong Kong and Singapore face a distinct and serious challenge to old-age income security due to their mix of public pension provision and intergenerational family support. Older persons in Singapore and Hong Kong depend mainly on their adult children for income security in the form of co-residence and cash transfers and more than half of them live with adult children. Empirical estimates and theoretical projections suggest that the Central Providence Fund (CPF) will not provide adequate retirement incomes, with benefit levels well short of those achieved by other advanced economies in the OECD. Financial support from adult children is decreasing and ageing population will create further stress test to the system.

Based on data of and micro labour market projections for 27 EU countries from 2010 to 2030, Dolls et al. (2017) estimated a less severe worsening of fiscal balances due to demographic changes as compared with previous studies which ignored labour market adjustments. Their simulations confirm that an increase in the statutory retirement age can balance fiscal budgets in the long run. Singapore has raised the official retirement age, legislated re-employment after retirement age, promoting employability of more mature workers; these policies aim to counter the possible negative impact of an ageing population.

7.3 Middle-Income Squeeze and Familial Challenges

Using the World Values Survey Singapore 2012, Ho (2016) provided some evidence that given the past trend of rising income disparity and the recent strengthening of redistribution, the middle income class might be squeezed in terms of national pride (a feeling as part of the Singapore nation) as well as attitude towards income redistribution, and suggests that the perception of low social mobility is also a reason for the findings among others. However, the middle income group had benefited from the

[49] Source: Chia (2017): Aging Population and Fiscal Sustainability

redistribution policies in Singapore as documented in Shanmugaratnam (2015), and hence there could be a misperception problem in 2012 when the World Values Survey was conducted, or when the benefits of redistribution has yet to trickle down to the middle-income group as perceived in 2012. The middle-income group in Singapore might perceive lower social mobility (read as upward mobility) than the lower income group while the upper or the very top income group may perceive low social mobility (read as low downward mobility for them). Dissemination and proper interpretation of data related to social mobility need to be enhanced if there is a misperception issue in addition to enhancing job opportunities and wellbeing for all, including the middle-income group, which forms the largest group of voters.

We will now use the data from the World Values Survey for Singapore 2012[50] to check the Spearman's correlation among the following variables related to social mobility, meritocracy and wellbeing:

V23 Satisfaction with Life "All things considered, how satisfied are you with your life as a whole these days?": a ten-point Likert scale question ranging from 1 (Completely Dissatisfied) to 10 (Completely Satisfied)

V96 Income Equality "Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between": 1 (Incomes should be made more equal) … 10 (We need larger income differences as incentives for individual effort)

V100 Hard Work Brings Success "Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between": 1 (In the long run, hard work usually brings a better life) … 10 (Hard work doesn´t generally bring success - it´s more a matter of luck and connections) Katic and Ingram (2018) used a reverse-coded version of this question to represent perceived social mobility. Here we interpret the reverse-coded version as an indicator of perceived meritocracy.

V228 "Which party would you vote for if there were a national election tomorrow?" The options given were People's Action Party (PAP), Workers' Party (WP), Singapore Democratic Party (SDP), and Others. We create a Vote for PAP dummy here. It is a timely variable to check on past data as Singaporeans are going to the poll for General Election on 10th July 2020; incidentally, 2011 was General Election and WVS for Singapore was conducted in 2012 and being the latest WVS Singapore data available in the public domain.

Table 7.1 shows the Spearman's correlations among the four variables. Look at the last column for the correlations of Vote for PAP (V228) with other variables: significantly positive relationships with life satisfaction (V23) and belief in hard work bring success or meritocracy (reverse of V100). Vote for PAP has no significant statistical relationship with whether income should be made more equal or that income differences are incentives for individual efforts. The simple results here are consistent with the continual emphasis on meritocracy and social mobility of the government of Singapore in the past, and even more critical now given the current disturbances to job opportunities due to COVID-19.

[50] Source: http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp.

Next, we look at the first column showing the correlations of life satisfaction with other variables. Life satisfaction (V23) is significantly correlated with a belief that income differences are incentives for individual efforts (V96), a belief in meritocracy (reverse of V100), and a support for PAP (V228). Again, we see the important role of meritocracy or perceived social mobility in one's subjective well-being.

		V23	V96	V100	V228
V23	Correlation Coefficient	1.000	.122**	-.114**	.103**
	Sig. (2-tailed)	.	.000	.000	.000
	N	1909	1908	1908	1749
V96	Correlation Coefficient	.122**	1.000	.030	.020
	Sig. (2-tailed)	.000	.	.198	.407
	N	1908	1908	1908	1748
V100	Correlation Coefficient	-.114**	.030	1.000	-.093**
	Sig. (2-tailed)	.000	.198	.	.000
	N	1908	1908	1908	1748
V228	Correlation Coefficient	.103**	.020	-.093**	1.000
	Sig. (2-tailed)	.000	.407	.000	.
	N	1749	1748	1748	1749

Table 7.1: Spearman's Correlations of Life Satisfaction (V23), Income Differences as Incentives (V96), Meritocracy (reverse of V100), and Support for PAP (V228)

Using data from National Youth Survey 2016, Ho (2018) echoed that expectations about the future, proxied by perceived opportunities in career and perceived meritocracy, are key contributors to Singaporean youths' wellbeing. National capital, community capital, and family capital are three important relationship stocks influencing the subjective well-being of the youths. A changing nature of families in Singapore such as being smaller, more diverse or complex, together with its impact on family support, family related life goals and transmission of family resources, will have implications on and pose challenges to the social mobility and well-being of the youths.

The overall trend of divorce rates in Singapore is upward, much higher for younger females and males. The divorce rate for females aged 20 to 24 years was 7.6 out of every thousand married population in the same age group in 1980, and it went up to 27.9 in 2017[51]; the figures for males aged 20 to 24 years old were 5.9 and 25.9[52] respectively for 1980 and 2017. Divorce may disrupt the gender division of labour of the husband and wife within the family; the single parent, often the mother, need to juggle between household production, child development and working for household income all by herself. A reduction in family resources, both monetary and in terms of time, is likely to affect the intergenerational investment in the child. Sawhill (2014) found that social mobility rates in U.S. are higher among children living with their continuously married parents than among those who experience either a family divorce or a long period of single parenthood; having unplanned children

[51] Source: https://data.gov.sg/dataset/divorce-rates-annual?resource_id=3ae4b4f4-3af3-43a0-8490-66af2087acde.
[52] Source: https://data.gov.sg/dataset/divorce-rates-annual?resource_id=3ae4b4f4-3af3-43a0-8490-66af2087acde.

early and having children outside of marriage are contributing to an emerging class divide in U.S., threatening her social mobility.

8 Concluding Remarks

Facilitating a continual social mobility is challenging for many countries, especially so for Singapore which has moved up the world's competitive ladder of economic prosperity rapidly since her independence in 1965, enabling the children of her pioneer generation to enjoy high upward mobility in terms of education, occupation, and income as expectations could be accustomed to past performance even though Singapore is now a mature economy with possibly diminishing growth. Adjustment of expectations for mere economic growth toward inclusive and sustainable growth is critical, not based on a mere influx of migrant labour possibly curbing productivity growth, but a longer term perspective of continual upskilling, reskilling, and education of Singaporeans in skillsets demanded by the world's economy amid technological changes, overcoming any potential digital or technological divides across social groups, and welcoming foreign professionals to contribute to Singapore's economy and integrate into the society.

Singapore's various policies and schemes facilitating social mobility are administered by different ministries with coordination. COVID-19 had revealed the importance of a coordinated and concerted efforts across different ministries to tackle the disruption caused by the pandemic. Ongoing and future strategies to enhance social mobility, likewise or even more critically, need to be well coordinated by a dedicated office to recommend, promote, monitor, coordinate, and evaluate these various policies and schemes.[53] The experience of the U.K. government in this aspect is useful.

Based on audits of the U.K. government's social mobility policies from 2013 to 2020 (covering early years, education, employment, housing, health, transport) recommended by the Social Mobility Commission, Social Mobility Commission (2020) found much policy inactions or actions being not effective: about a third of recommendations was hardly acted upon; almost half saw some but insufficient progress; only a quarter had strong progress. On the aftermath of COVID-19, the outgoing Chair of the Commission said, "Social mobility has never been more important. It is the poor and the young who will suffer the most from the economic downturn. To succeed action will need to be driven from the heart of government. At present, there is no meaningful coordination between departments on the social mobility agenda, and no single force championing social mobility across government." The report concluded that "a dedicated unit should be set up at the heart of government to coordinate action and ensure its recommendations were delivered."

Importantly, the findings on the effectiveness of strategies to facilitate social mobility will help Singapore prepare herself better for the future ahead, and should be disseminated with explanations to the Singaporeans, allowing well-informed debates and proper evidence-based research discussions. Both actual and perceived upward mobilities matter significantly to the middle-income class in Singapore.

Politically, the middle-income class should be not just the main engine of steady growth, but also the stabilizing agent of the society, having a great sense of national belonging, enjoying opportunities of upward mobility, and not felt being squeezed amid fiscal redistribution. An ageing population will need a larger social spending and therefore it is important to have fiscal sustainability with economic growth. The median voter theorem reminds the government to bring forth or maintain policies contributing to the well-being of the families from the middle-income class.

[53] For instance, SkillsFuture, being a critical long-term national strategy with various programs aimed to enhance the productivities of Singaporeans, should conduct studies on the effectiveness of such programs in the future.

Social well-being instead of individual well-being, we argue, should be the yardstick for various social mobility strategies. Major and Machin (2020) argues that major reforms are needed to effectively raise social mobility in U.K. and recommends various policies to strengthen four principles: Collectivism, Fairness, Community, and Decency. These desired values are more social than individualistic in nature.

Under Collectivism, policies will facilitate levelling the playing field for all, cultivate a collective mindset for collective success, and improve the pay for those in valuable public services (nurses, teachers, social workers, and carers) which contribute a positive spill-over to the rest of the society. The well-being of essential workers was discussed during the Circuit Breaker of COVID-19 in Singapore, more so because some migrant workers were also providing services in public amenities.

Under Fairness, allocate school places to equally deserving candidates randomly instead of on location basis (as many parents admitted to cheating by renting houses nearby) and pick oversubscribed university students at random from those who have achieved a basic threshold of academic grades. The primary school admission exercise in Singapore may be reviewed with a consideration on the costs and benefits of residential location, and other affiliations. The Fair Consideration Framework in Singapore is set in place, also reviewed regularly, to ensure fair competition for job vacancies open to both Singaporeans and foreign counterparts.

Under Community, affordable housing, proximity to jobs, connected and integrated communities, and good local schools with good teachers are needed within the community. We infer that it will reduce social stratification and spatial segregation with spreading opportunities to local communities instead of a concentration of excellent opportunities in one centralised location. Social mixing across groups, facilitated by public amenities, quality public education perhaps starting from preschools, quality public housing, and even the national service in Singapore, can be strengthened.

Under Decency, establish minimum rights to create decent jobs, with career progression built in, instead of outsourcing lower-level work to temping agencies and other contractors, and consider reforms for those not academically inclined so that they may acquire key skills, taught in a practical, meaningful jobs-focused curriculum. The Progressive Wage Model (PWM) of Singapore should be evaluated, strengthened, and may be extended to more sectors, if it works well in linking pay progression to productivity improvement. A reduction in the reliance on migrant unskilled workers, probable in the future, should be accompanied with skill investment in the local workers.

The recommendations of Major and Machin (2020) for U.K. are important learning points for Singapore too. Government policies fostering a caring society, with a larger weight on non-economic aspirations such as family-oriented and altruism-oriented life goals, within a social compact not based merely on economic gains or transfers, could become more important for Singapore in the future.

Ho (2018) estimated that non-zero-sum aspirations such as family-oriented and altruism-oriented life goals were positively correlated with happiness and life satisfaction of Singaporean youths while zero-sum life aspirations like making lots of money and career progression had a negative correlation, based on data from the National Youth Survey 2016. We want to make a bold conjecture that cultivating a caring-for-others social compact (across generations, social groups, business, workers, and government) and upholding principles of Major and Machin (2020) will enhance social mobility, individual well-being, and social well-being.

In conclusion, following her past economic success and high upward mobility, Singapore strengthens key institutions to develop the human capital of her people, to seize jobs and opportunities offered by

the world economy, and to assist disadvantaged groups to move up the social ladder amidst future challenges and uncertainty. Inclusive economic growth with fiscal sustainability and openness will attract people to live and work here. Strengthening the social fabric with policies encouraging concern for others and positive spill-over will uplift both social well-being and social mobility in Singapore.

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